

July 1985 No. 40

95p

# sinclair user

BRITAIN'S BEST SELLING SINCLAIR MAGAZINE

**EXCLUSIVE**

**THE FOURTH  
PROTOCOL  
50 GAMES  
TO BE WON**



**QL PLAYS GAMES  
FRANKIE GOES SOFT  
BOND IS BACK**





AMSTRAD 10-95  
24 SPECTRUM 17-95  
COMMODORE 64 10-95

# HYPER SPORTS™

HYPER SPORTS



**Konami®**



..the name  
of the game

Be only at your peak as  
you enter the HYPER  
SPORTS stadium to compete in six NEW  
exhausting events in this state of the art  
simulation – the officially  
endorsed version of the  
No.1 arcade game.

The screens above are taken from the Arcade version  
and may differ from the home computer versions.

**Continuing the challenge  
where 'Track and Field' left off.**

Imagine Software is available from: WOOLWORTH, WHSMITH, John Menzies, LASKYS, Rumbelows, COMET, Spectrum Shops and all good dealers.





**EDITORIAL** Editor Bill Scolding Deputy editor John Gilbert Staff writers Chris Bourne, Clare Edgeley Designer Craig Kennedy Editorial secretary Norisah Fenn Publisher Neil Wood  
**ADVERTISING** Advertising manager Rob Cameron Deputy advertisement manager Louise Fanthorpe Advertisement sales executive Kathy McLennan Production assistant Jim McClure Advertisement secretary Linda Everest  
**MAGAZINE SERVICES** Subscriptions manager Carl Dunne  
**TELEPHONE** All departments 01-251 6222  
*Sinclair User* is published monthly by EMAP Business & Computer Publications

## SOFTWARE

- TOP 30** 7  
 Sinclair User Classics enter charts
- SPECTRUM SOFTWARE** 17  
 Exclusive previews of *The Fourth Protocol*, Quicksilver's *Glass*, Imagine's *Hypersports*, Palace's *Cauldron*. Plus Frankie, 007 and Paul McCartney game reviews



*On Her Majesty's Secret Software*, page 20

**QL SOFTWARE** 29  
 Jet Set Willy and Jet Pac lookalikes make the Quantum leap. Pascal from Metacomco gets a Classic rating

**HIT SQUAD** 58  
 Imagine is dead, long live Imagine. Shadowfire and Frankie programmers Denton Designs exorcise some Merseyside ghosts



*Frankie goes to Liverpool*, page 58

**BUSINESS SOFTWARE** 71  
 Questionnaires analysed with Survey II, data analysed with Statistics I, transactions analysed with Bizzicom

**ADVENTURE** 96  
 Richard Price gets bored with the Hobbits and searches for the Golden Joystick and the Key of Hope

## HARDWARE

- QL HARDWARE** 37  
 John Lambert gets his hands on the ill-fated QCOM package at last, and assesses the discs from Quest
- SPECTRUM HARDWARE** 39  
 Exclusive preview of Saga's graphics tablet, plus an essential add-on for all microdrive owners

## PROGRAMMING

- ENTRY POINT** 47  
 The art of motion pictures. John Gilbert continues his course for Spectrum beginners
- MACHINE CODE** 53  
 Marcus Jeffery jumps about while demonstrating a scrolling digital counter – all in glorious Z80 code
- ADVENTURE PROGRAMMING** 89  
 The complete AI adventure listing
- HELPLINE** 105  
 Andrew Hewson has a peek at the Basic Spectrum memory map

## LISTINGS

**PROGRAM PRINTOUT** 77  
 Explore the Tombs of Q'rrtal, try our luck at the Rifle Range, dice with death on the streets of Manhattan and back-up QL software



*Electro-Man in Revenge of the Bugs*, page 82

## FEATURES

- PROBLEM SOLVING** 62  
 Brain-teasers and how to solve them. Marcus Jeffery has the answers
- SPECTRUMS ABROAD** 67  
 A trip to some corner of a foreign field that is forever Sinclair

## REGULARS

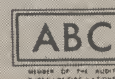
- NEWS** 5  
 Sir Clive in trouble, C5 dropped
- SINCLAIR SIMON** 6  
 Our hero gets a touch of the gremlins
- ZX WORD** 8  
 Test your knowledge of computereze
- QL NEWS** 9  
 Supply of the QL outstrips demand
- LETTERS** 13  
 Star ratings come in for some stick
- ZAP CHAT** 15  
 Peeks and pokes for arcade action
- SINCLAIR SURGERY** 45  
 Spectrums cured of terminal illness
- ADVENTURE HELPLINE** 93  
 The gospel according to Greatbelly
- COMPETITION** 103  
 Crack the Fourth Protocol code



*Win a classic spy adventure*, page 103

- SOFTWARE PUBLISHERS** 109  
 Our directory of software suppliers
- NEXT MONTH** 113  
 A tantalising glimpse of the future
- GREMLIN** 114  
 The hottest gossip in town!

If you would like to contribute to *Sinclair User* please send programs or articles to:  
*Sinclair User*, EMAP Business & Computer Publications, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU  
 Original programs should be on cassette and articles should be typed. We cannot undertake to return them unless a stamped-addressed envelope is included.  
 We pay £20 for each program printed and £50 for star programs.  
 Typeset by Saffron Graphics Ltd, London EC1. Printed by Peterboro' Web, Woodstone, Peterborough.  
 Distributed by EMAP Publications Ltd. © Copyright 1985 *Sinclair User* ISSN No 0262-5458

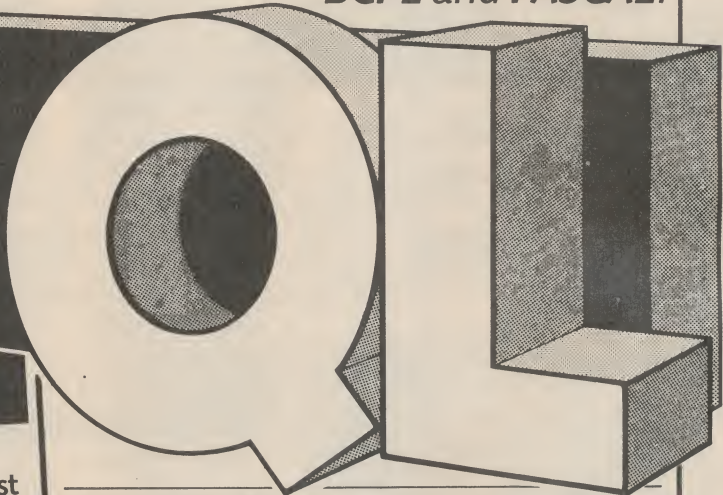


91,901  
 Jun-Dec 1984



**Write programs to unlock the multitasking power of your QL!**  
 Choose the language you need from Metacomco's unrivalled range  
 of high-quality languages for the QL: The best selling **ASSEMBLER**;  
 The language of the future, **LISP**; and two professional compilers,  
**BCPL** and **PASCAL**.

# RELEASE THE POWER OF THE



## QL PASCAL £89.95 INC. VAT

Newly available, a true Pascal compiler for the QL!  
 Developed by Metacomco: leaders in Pascal - the first  
 software house to achieve full ISO validation of a  
 Pascal compiler for the 68000. QL Pascal is a high  
 specification implementation of this popular language,  
 endorsed by Sinclair Research for use on the QL.

- > True compiler producing native 68000 code:  
compact and efficient.
- > Fast, single pass compilation without intermediate  
stages.
- > Complete implementation of ISO 7185 - the  
international standard for Pascal - making it ideal for  
commercial and educational use.
- > Direct addressing of the full QL address space.
- > Key routines provided on ROM for extra speed and  
convenience.
- > No run time licences required for commercial  
applications written using QL Pascal.
- > Any length variable names and full 32-bit integers.
- > Easy to use interfaces to QL windows, graphics,  
traps, screen handling, file operations, etc.
- > Will handle very large sets and  
arrays.
- > Approved by Sinclair Research  
for use on the QL.

**NEW**

The Metacomco Development Kits are  
 available from W.H. Smith, John Lewis,  
 HMV, Menzies, Boots and other leading  
 retailers, or direct from Metacomco.

**METACOMCO**

26 Portland Square, Bristol BS2 8RZ.  
 Tel: Bristol (0272) 428781

QL and QDOS are the trade names of Sinclair Research Ltd.

## ASSEMBLER

**£39.95** INC. VAT

A high specification macro assembler supporting the full  
 Motorola instruction set.

Features: external references; absolute, position  
 independent, and relocatable code; linker; precise error  
 messages; formatted listings; macro expansions;  
 conditional assembly; and a large range of directives.

## BCPL

**£59.95** INC. VAT

A true compiler, ideal for systems programming -  
 writing utilities, games and applications.

Features: generates native 68000 code; run time  
 library includes easy QDOS interfaces; link loader links  
 separately compiled segments; modules can be linked  
 with Pascal or assembler.

## LISP

**£59.95** INC. VAT

A LISP interpreter for exploring "The language of  
 artificial intelligence".

Features: Turtle graphics; compatible with LISP  
 for the BBC micro; full support of QL features; struc-  
 ture editor; prettyprinter; garbage collector and tracer.

Every DEVELOPMENT KIT includes Metacomco's  
 popular screen editor, and a detailed manual.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

POSTCODE \_\_\_\_\_

TEL. NO. \_\_\_\_\_

SIGNATURE \_\_\_\_\_

Phone today or post this coupon to:  
 Metacomco, 26 Portland Square,  
 Bristol BS2 8RZ. Please send me:

Assembler Development Kit £39.95 \_\_\_\_\_

LISP Development Kit £59.95 \_\_\_\_\_

BCPL Development Kit £59.95 \_\_\_\_\_

QL PASCAL Development Kit £89.95 \_\_\_\_\_

I enclose a cheque for £ \_\_\_\_\_ or  
 debit my ACCESS/VISA Account No. \_\_\_\_\_

\_\_\_\_\_

CARD EXPIRY DATE: \_\_\_\_\_

Price includes VAT, postage and packing UK mainland only. Delivery, allow up to 28 days.

SU7



## The year of the Tiger

THE SOFTWARE market is reeling from the collapse of Tiger, one of the major distributors, with debts of up to half a million pounds.

Tiger was the exclusive distributor for the John Menzies chain, and matters came to a head when Menzies returned large quantities of unsold stock, bought on a 'sale or return' basis.

Tiger seems to feel it was badly let down, claiming Menzies had promised to support Tiger in its time of crisis.

Bill Jones, merchandise director for Menzies, says such criticism is totally unjustified. "There is one hell of a lot of software involved," he says, "in excess of £100,000 worth. An awful lot of Tiger's problems they brought on themselves. We did everything in our power to ensure their survival — to a limit."

The word on the street suggests up to a dozen major software companies might be forced to close because of the money they are owed by Tiger.

At least 160 software houses are owed money by Tiger, although only two or three are owed more than £20,000. Brian Wilcox of Elite, owed £19,000, says Elite is expecting to be recompensed by Menzies.

Because much software goes out of fashion very swiftly, the returned stock, worth more than £400,000 at retail prices, is unlikely to fetch more than £25,000 in the trade. That could lead to a glut of dirt cheap software on the market.

Major creditors of Tiger include Ocean, Firebird, Elite, Hewson Consultants and Argus Press Software, among others. Some companies, however, were clever enough to see trouble coming, and got out quick.

## Clive loses control

THE COLLAPSE of the Sinclair empire may be on the way according to industry watchers and financial pundits.

Sinclair Research has had to deal with a £5 million bank overdraft and debts totalling £10 million to pay off creditors Thorn EMI and Timex.

Sir Clive is looking for new investors who could save the company. Thorn EMI was quick to deny that it would take a stake in the company and write off its debts owed for its products.

Other candidates for a rescue plan include Philips, Pye and the British electronics giant GEC.

Sinclair's financial prob-

lems are the result of a general depression in the computer industry. A drop in demand for the Spectrum Plus and the halt in production of the over-stocked QL has meant that staff at the Timex manufacturing plant at Dundee have been put on a two day week.

A statement put out by the company shows that Sir Clive is also having to restructure Sinclair management. "Sir Clive has been seeking a new chief executive officer for the company, a post which he has held to date." The statement goes on to say that despite the new top level vacancies Sir Clive would continue as chairman.



Clive: looking for money

If the crunch comes, Sir Clive would be faced with two options. He could sell part of his remaining 90 percent company stock or, alternatively, he could sell Sinclair technology.

Despite financial difficulties Sinclair still has the 40 percent lion's share of the computer market, though that market is diminishing. Sir Clive's problems are not on the scale of the financial disaster which caused the Acorn-Olivetti merger earlier this year. Acorn is now having problems with the new BBC Model B+ which retailers are refusing to take.

Commodore is also likely to be in dire financial straits by the end of the year. Irving Gould, recently appointed chairman of Commodore, has warned creditors that it is likely to make a \$20 million loss.

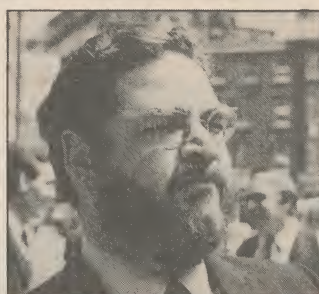
Atari is having distribution problems with its new range of computers. It has dropped links with Terry Blood and Lightning.

## Midsummer Microfair

NEW DISC systems and interfaces, discounts and a great summer sale are all under one roof at the 16th ZX Microfair, to be held on June 22.

The venue is the new Horticultural Hall at the junction of Greycoat Street and Elverton Street, London SW1 — a short walk from Victoria station.

The show will be open from 10am to 6pm and the price of admission is £1.50 for adults and £1.00 for those under 14 years. Advance tickets are £1.25 for



Johnston: 16th show

adults and 80 pence for under 14s. Send a cheque, made payable to ZX Microfair, and an SAE to Mike Johnston (organiser), Dept SU, ZX Microfairs, 71 Park Lane, London N17 0HG.

## Death of ZX-81

SOFTWARE FARM, the ZX-81 software specialist, may be forced to pull out of that market following the demise of distributor Tiger.

Tiger was the only distributor prepared to take ZX-81 software in any quantity.

"It's rather a disastrous stroke for us," says director Julian Chappell. "We cannot turn a profit on ZX-81 software by mail-order only, and it does leave a very big ques-

tion mark on the future."

Although Tiger owes Software Farm over £5,000, Chappell is adamant that the company will not fold. "We're moving into the Spectrum market anyway," he says. "We'll probably continue to sell our ZX-81 software through our software club".

The first Spectrum game from Software Farm is planned for the end of July. Potty



Chappell in happier times

Professor will be based on the wacky machines drawn by Heath Robinson.

more news on page 6.



# 128K Spectrum mystery

THE SINCLAIR silly season seems to have arrived early with rumours of a new 128K Spectrum.

A story in *Popular Computing Weekly* started the controversy and since then software houses and press alike have been trying to find the truth behind the rumours. One top software house confirms that it has heard about the new model from Sinclair: "We have not got one yet but we are on the list. We expect it to be delivered just before Christmas."

The new machine will be Z80 based and will have to incorporate a way of switching 64K or 16K blocks of RAM as the eight-bit chip cannot address 128K.

The software house also says: "We already have a method of switching in the

extra banks of RAM and we have some plans already for the new machine."

Sinclair Research would not comment on the Spectrum 128K but Julian Goldsmith, a spokesman, says: "We obviously have people down at Metalab who are looking into new applications. We have always portrayed the Spectrum machines as being a family

of machines and if we see the need we may add to it."

Many software houses, however, have not been told about the new computer. Margaret Austin of the adventure company Level Nine says: "We have only seen press reports. Nobody had talked to us about supplying one. It would be nice though. Few manufacturers give software houses de-

velopment machines."

John Campbell of Campbell Systems says that he also has not heard about the new machine. He has, however, discovered other projects: "I have heard from Sinclair that they might release a new Interface 1."

The interface would have an inbuilt microdrive and be priced at £50. The price is half that of the current Interface 1 Expansion system and would be equivalent to buying one microdrive and getting the RS232C free.

## As Prism dies Blood mops up

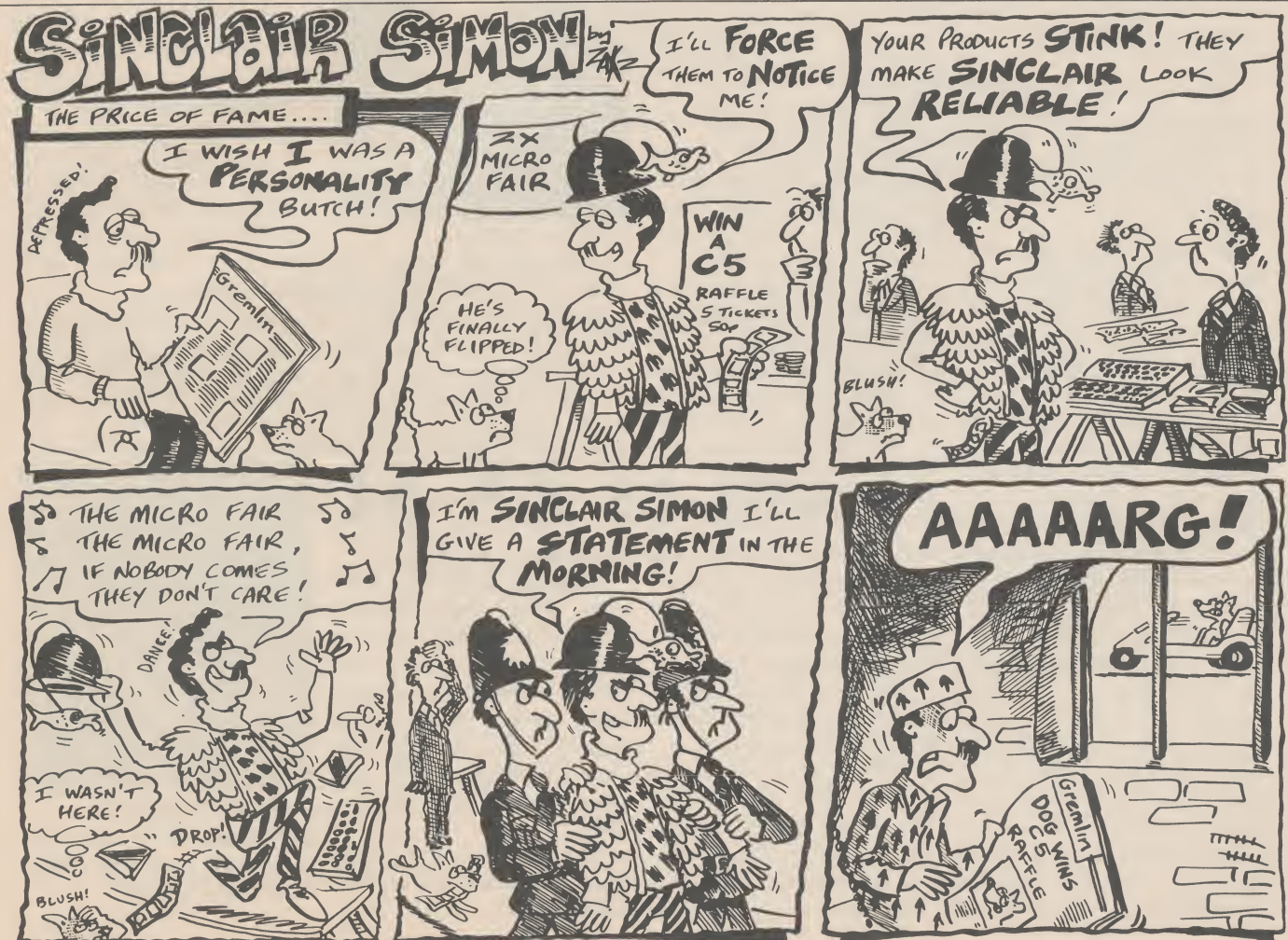
TERRY BLOOD is now the only distributor of Sinclair hardware in the country, following the final liquidation of Prism Technology with total debts of £7.5 million. Terry Blood is also helping to deal with returned Spectrums from Prism customers.

"We are really just acting

as a postbox for Sinclair in this matter," said a spokesperson. The largest retail outlets such as Smiths and Boots deal directly with Sinclair Research, but others will now have to buy through Terry Blood.

Sales of the Spectrum Plus are now said to be running at 7,000 a week,

and the QL at about 500 a week, which is described as an improvement. "We have been evaluating dealers and appointing a network of 500," said the spokesperson. "It's selling on home computer profit margins which means retailers have to do a lot more work. But the returns are very low."





# New releases

CONTINUE the adventures of **Jet Set Willy** in a new setting involving aliens, more puzzles and more rooms. **Jet Set Willy II**, **The Final Frontier** from Software Projects is in the shops now at £6.95.

**Popeye** and **Hagar the Horrible** are two games to look forward to from DK'tronics. Feed Popeye spinach to keep his strength up in his search for gifts to win Olive Oyl's love. Popeye will be released in July. **Hagar the Horrible** is to be released in the autumn, and is based on the popular cartoon strip.

A host of releases can be expected from US Gold in the next few months, all for £7.95. **Dambusters** is a historical representation of the raid on the German dams in World War 2. It will be available in July. **Buck Rogers**, based on the film is out this month.

Frank Bruno's boxing, endorsed by the man with fists like sledge hammers, is Elite's latest offering and is a boxing simulation based on Nintendo's arcade game **Punch Out!!** You control Bruno, who is transparent so that you can see your opponent through him. Costing £6.95, it will be available in mid-July.

Also from Elite, **Scooby Doo**, with theme and graphics based on the TV cartoon, will be ready in early September at £6.95.

Load up for **Highway Encounter**, Vortex's new game which is a fast shoot 'em up played on a highway overrun by hostile aliens. To be released on July 14, it is priced at £7.95.

**Neverending Story** is a new release from Ocean, based on the film of the same name, and is due at the end of August.

The newly resurrected Imagine label has signed up Konami's arcade games for

release on the Spectrum, all priced at £7.95. **Hypersports**, reviewed in this issue, was released in June and Konami's **Tennis** follows in July. **Yie Ar Kung Fu**, **Hyper Rally**, and Konami's **Golf** will follow.

Two long-awaited games from Digital Integration are imminent. **Tomahawk** and **TT Racer** will be released sometime in the autumn and the price will be under £10.00. **Tomahawk** is a helicopter flight simulation based on the Apache. It features 2,000 ground scenes and 3D graphics.

**TT Racer** is a racing simulation based on the Suzuki Project 500. As you lean to accelerate round a corner the picture tilts giving a more realistic effect.

Another simulation is **Jump Jet** from Anirog. It simulates vertical take-off aircraft. It will be in the shops on 22 July at £7.95.

**Three Days in Carpathia** comes from Ariolasoft but was written by the Ram Jam team who programmed **Valkyrie 17**. Ariolasoft is giving nothing away, but we do know that it will be an adventure of sorts. It is due to be released this side of Christmas!

**Nodes of Yesod**, from Odin, features a somersaulting spaceman. It is an arcade adventure where you have to search for objects in a maze. It should be available in mid-June and costs £9.95.

**On the Run** will be out at the end of this month costing £6.90, from Design Design. You are an intrepid explorer trapped in a large maze — around 250 screens.

Finally, from Melbourne House comes **The Way of the Exploding Fist** in July for £8.95. It is a karate game incorporating 18 kicks, blocks and jumps and is similar to the arcade **Karate Champ**.

more news on page 8

## TOP GALLUP 30

This chart is compiled by Gallup by sampling sales at 250 retail outlets, including high street chain stores and independent home computer shops

MONTH ENDING MAY 16

1	SOFT AID	QUICKSILVA/VARIOUS
2	SPY HUNTER	US GOLD
3	WORLD SERIES BASEBALL	IMAGINE
4	◇ STARION	MELBOURNE HOUSE
5	◇ SHADOWFIRE	BEYOND
6	◇ BRUCE LEE	US GOLD
7	◇ GYRON	FIREBIRD
8	◇ CHUCKIE EGG 2	A'N'F SOFTWARE
9	FINDERS KEEPERS	MASTERTRONIC
10	◇ EVERYONE'S A WALLY	MIKRO-GEN
11	◇ GRAND NATIONAL	ELITE
12	◇ DEATH STAR INTERCEPTOR	SYSTEM 3
13	◇ ALIEN 8	ULTIMATE
14	◇ RAID OVER MOSCOW	US GOLD
15	◇ GREMLINS	ADVENTURE INTERNATIONAL
16	◇ MOON CRESTA	INCENTIVE
17	◇ BRIAN JACK'S CHALLENGE	MARTECH
18	FORMULA 1 SIMULATOR	MASTERTRONIC
19	◇ DRAGON TORC	HEWSON CONSULTANTS
20	MATCH DAY	OCEAN
21	◇ BOOTY	FIREBIRD
22	◇ DALEY THOMPSON'S DECATHLON	OCEAN
23	◇ GHOSTBUSTERS	ACTIVISION
24	◇ CHILLER	MASTERTRONIC
25	◇ AIR WOLF	ELITE
26	◇ FOOTBALL MANAGER	ADDICTIVE
27	◇ WIZARD'S LAIR	BUBBLE BUS
28	◇ 911 TS	ELITE
29	COMBAT LYNX	DURRELL
30	SKOOL DAZE	MICROSPHERE



# C5 is dropped

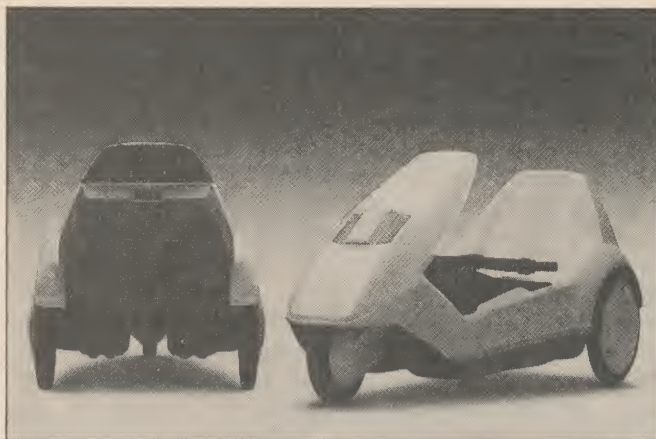
THE C5 has been dropped from the catalogue of distributor Lightning, due to disappointing sales and an ill-informed media onslaught.

Spokesman Dave Woods says it proved impossible to sustain the initial interest in the machine and Lightning therefore decided not to place further orders.

Sinclair Vehicles spokesman Bill Nichols says the decision is regrettable but the number of C5s involved is not significant. "Sales up until April were 8,000 and there has been an upturn with the better weather," he says.

On the subject of bad press, Nichols says the machine was taken far too seriously at first. "An expectation was aroused, and perhaps we should have told the world more about it beforehand."

The *Observer* recently published a story alleging that Sinclair Vehicles was up for sale. "Several parties are understood to have been approached," it stated. According to Nichols, the story was, "not true at all. There have been and are no plans to sell Sinclair Vehicles."



## Faster than a speeding bullet

IS IT A BIRD? Is it a plane? No, it's yet another software spinoff, this time featuring the guy who wears his pants outside his trousers.

Beyond, who has first refusal on all games from American software house First Star, has jumped at the offer of **Superman** which will be released on its new label, Monolith.

**Superman**, which should be available in the autumn,

will be as faithful to the comic strip as possible, featuring cartoon-style graphics. Clive Bailey of Monolith says, "Every stage of the game has to be approved by DC Comics in the USA."

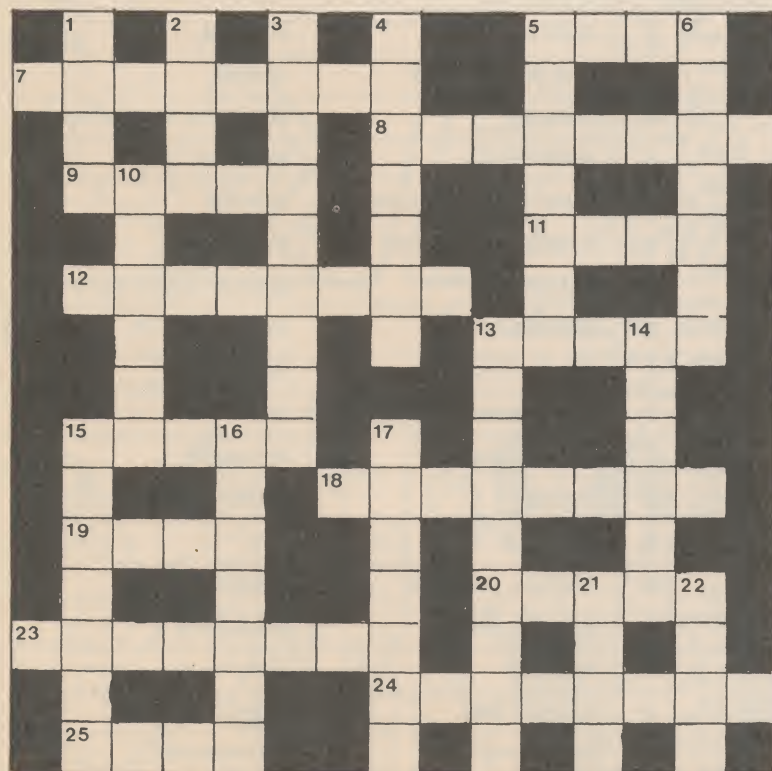
The game is written using an authoring system — much faster than conventional methods of programming. The games designer, graphics artist and musician

can all work on the game together.

The deal means that games based on other characters from DC Comics, like Batman and Supergirl, may be forthcoming.

According to Clive Bailey, Monolith hopes to release the Spectrum and Commodore versions at the same time. The price of the Spectrum version will be around £9.95.

## ZXWORD by Henry Howarth



### Across

5. Exchange for wasp (4)
7. Modem perhaps unwelcome when called in (8)
8. Aixelsyd (8)
9. Following string in the rafters (5)
11. Musical ending of a programmer, by the sound of it (4)
12. Not a logic gate (8)
13. Points to attempt for access (5)
15. Somehow cater for debugging (5)
18. Albino MI expansion? (8)
19. Space for nothing in ROM (4)
20. Stored LED, if corrupted (5)
23. Heaven for Nordic gods (8)
24. Royal Exchange with up-market boat to put on the market again (8)
25. Some absurdly irrational number (4)

### Down

1. A million ruined the game (4)
2. For it must follow in Basic (4)
3. Replace stored information above pen (9)
4. Commanded a pair like (x,y) (7)
5. SI unit of Information Technology? (7)
6. Type of number encountered at junior school (7)
10. Input digit for key-strokes? (6)
13. EOF as office wastebin, perhaps (3,2,4)
14. Spin to tear (6)
15. Strings as substring of both read statements? (7)
16. Imperative statement (7)
17. Where to browse to get your routines? (7)
21. Large in amplitude (4)
22. Cut into little bits what are unfair when loaded (4)

solution on page 110



## Putting zap into the QL

WHAT IS claimed to be the first arcade game launched for the QL is **Zapper** from Eidersoft.

Ken Browning, company head, describes it as 'nothing new' but adds that it contains 'super-smooth sprite graphics and looks a bit like **Galaxians**'.

The game was written by Janko Mrfic-Flogel, a 16-year-old Yugoslavian who is still at school. He has managed to squeeze 11 levels, with 18 aliens on screen at the same time, onto the QL.

Janko is also the author of **QL Caverns**, an arcade platform game from Sinclair Research. The game contains 50 locations and uses levels and ladders in a similar way to **Jet Set Willy**.

A new company called Westway is also getting into the act with an arcade game called **EVA**.

The game bears similarities to **Jet Pac** but involves building a matter transporter while dodging energy bolts. Both **QL Caverns** and **EVA** are reviewed in QL Software Scene.

## All aboard for Exchange

THE ROM-based version of the Psion application software should be available by the middle of the year.

The package, called Exchange, will include integrated versions of **Abacus**, **Archive**, **Easel** and **Quill**. It will plug into the memory expansion bus at the side of the computer and not into the ROM slot at the back.

Sinclair has yet to decide whether to produce a new version of the QL incorporating Exchange onboard. Such a move would depend on how well the add-on ROM was received.

# A halt in production

A HALT to QL production was called recently because output had exceeded demand.

Julian Goldsmith, a spokesman for Sinclair Research, confirms that production is at a standstill but says that 'the measure is only short-term'.

Previously, Sir Clive Sinclair had been predicting that 200,000 QLs would be sold this year but generous estimates have put the total sold at 60,000 covering the period since it was launched.

The company is now looking for sales abroad and has converted much of its English stockpile for foreign markets, two of which are



*Searle: not worried by lack of success*

Spain and the United States. Goldsmith says: "Spain is a big market and we have a 75 percent share of it."

The introduction of the QL into the States has also provoked a lot of interest. The company says that it has received over 26,000 en-

quiries about the QL and that the machine should have a strong future in the States. Former Sinclair managing director Nigel Searle is co-ordinating the marketing operation.

Searle is eminently qualified to spearhead the attack on the US. He has had eight years experience of the American way of life and three of those where spent as managing director of Sinclair US in Boston.

He is not worried by the relative lack of success so far encountered by the company. He said, at a meeting of manufacturers and distributors before he left Britain, that before they had joined Timex they had sold almost 25,000 computers on the American market. The company was optimistic that it could sell at least 50,000 machines this year.

## Intelligent Sketchpad

A COMPREHENSIVE graphic design package has been launched by Sigma Research.

**Sketchpad** is software-based and can be obtained on microdrive. It is similar to the Talent **GraphiQL** but does not allow the creation and manipulation of graphic textures. The package does, however, allow the usual pixel, line, arc, fill, and text functions.

Sigma Research claims

that one of the most advanced features of **Sketchpad** is its ability to store displays in a compact data file which only contains those sections of the screen which have been used for drawing. That makes the package faster to load than others on the market.

More information about **Sketchpad** can be obtained from Sigma Research, 231 Coldhams Lane, Cambridge, CB1 3HY.

## Quest for brain games

HARDWARE manufacturer Quest has entered the games and utility market.

The releases include a card game, an adventure and a sprite designer. In **Blackjack** the computer plays the part of the banker with three randomly generated packs of cards. Full colour graphics are used and the company claims that every permutation of the casino game is possible.

**Quest - The Adventure**

was originally a game for the Apricot PC. The company has transferred it to the QL and says that the colour and graphics have been enhanced on the new version. The game involves navigating a sailing ship around an uncharted ocean, collecting treasure and keeping the morale of the crew high.

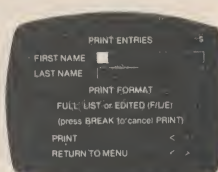
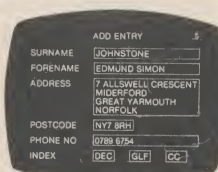
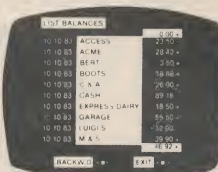
The sprite designer, **Zappit**, allows the user to develop up to 99 sprites which can be on the screen at the

same time and manipulated through SuperBasic, without the use of PEEK or POKE.

All the packages are available on microdrive but Quest intends to produce disc versions in the near future. **Blackjack** is priced at £19.95. **Quest - The Adventure** and **Zappit** cost £14.95. More information about all Quest products can be obtained from PO Box 49, Torquay, Devon.



# Spectrum + me



If you've got a 48K Spectrum™ and accounts to manage, OCP will make the job easier and faster.

All our business and utility programs are Sinclair Microdrive Compatible, and the Plus 80 versions are versatile enough to drive full size 80 Column Printers through most Centronics and RS 232 Interfaces including the ZX Interface 1. However, our standard programs (except Stock Manager) only work with ZX and Alphacom 32 Column printers.

The magic of MACHINE CODE has enabled us to produce the very latest "on the page" presentation which lets you enter and edit data naturally, as if filling in a form.

## **FINANCE MANAGER £8.95 PLUS 80 £19.95**

Voted the best in its class by the Sinclair Users Annual, this easy to use program is a powerful and flexible aid to practically all domestic and business accounting applications. Show up to 255 separate accounts with running totals, and review standing orders as you scroll back and forth through your accounts. But that's not all, this program automatically raises a corresponding debit or credit for every entry, and will even open a new account if an entry features an unrecorded account name.

Having all your finance records so neatly stored is the height of efficiency! The program is entirely menu driven for ease of operation, yet the facilities are so extensive you'll soon wonder how you managed without it.

## **ADDRESS MANAGER £8.95 PLUS 80 £19.95**

A very useful MACHINE CODE application program with limitless applications at work and at home.

Manage your address book with efficiency and speed! Address Manager stores up to 350 names, addresses, and phone numbers – depending on their length. Or up to 1200 individual names/titles/references. The Plus 80 version also embodies a comprehensive Label Printing routine.

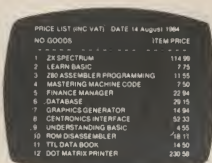
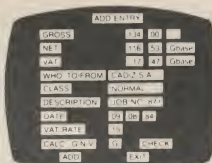
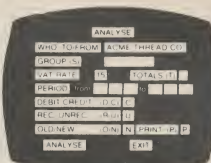
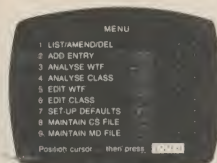
In the office, Address Manager can store internal phone directories, store and analyse customer's records, and much much more.

If you've already got Finance Manager and/or Address Manager but in non-Microdrive format, and you'd like to update them, we'll give you a £3 rebate towards the cost of a Microdrive Compatible 32 Column, or £5 off the Plus 80 version. This offer is available via mail order only.

The OCP range includes: VAT Manager, Address Manager, Finance Manager, Stock Manager (80 Column only).



**Means serious business!**



**VAT MANAGER £8.95 PLUS 80 £19.95**


Your VAT 100 return need no longer be a headache! Simply key in the Gross or Net values of all the period's sales and purchase invoices and VAT Manager will check, analyse and total all the relevant details. Available in 32 Column or Plus 80 versions, VAT Manager will check all calculations automatically, and will even work out details of exempt totals where the trader is not required to pay VAT. This is performed with its CLASSIFY feature for types of transactions, and GROUP feature for more detailed analysis.

**PLUS 80 STOCK MANAGER £19.95**

Provides a controlled stock environment for up to 600 different product lines.

The program has facilities for the production of invoices, sales totals, price lists, and shows stock status, stock adjustment and re-order requirements.

No business should be without this crucial Microdrive program. Now you can compute your entire stock balances all on one program – Stock Management has never been so easy! Coupled with a suitable printer it will take advantage of the 80 column width printout to produce quality hard copy.

Now the most helpful aids to business efficiency are as near as your local software stockist. Call in soon and see the latest in OCP's exciting range of business software. Available from larger branches of WHSMITH  or mail order direct.

For instant purchase contact the OCP Hotline on 0753-889055  
with your Access details or complete the coupon below.  
Cheque/Postal Order should be made payable to Oxford  
Computer Publishing.

Please rush me the following software packages:

	Price _____
	Price _____
	Price _____
	Price _____

I enclose a Cheque/P.O. for the sum of £

Name \_\_\_\_\_

Address \_\_\_\_\_

---

---

---



4. Dist.

Simply The Best

77A Packhorse Road, Gerrards Cross, Bucks. SL9 8PQ.

Our Utilities include: Machine Code Test Tool, Editor/Assembler and Master Tool Kit.

**sinclair** ZX, ZX SPECTRUM & ZX MICRODRIVE ARE  
ALL TRADEMARKS OF SINCLAIR RESEARCH LTD.

三

Simply The Best

77A Packhorse Road, Gerrards Cross, Bucks. SL9 8PQ.



Today's demand from Spectrum Users is for a disc facility.

The power from the Disc Interface comes from its 8K ROM based operating system. It incorporates some unique features. All your cassette based software can easily be transferred using the tape - disc facility. It can also drive any independently power disc drive giving you a choice of 3", 3½" and 5¼".

**£99.95**  
inc VAT and P&P

inc VAT and P&amp;I

The new Kempston Disc Interface System marks a significant change in Home computing. The demand for technology is growing and Kempston are setting the pace. So when you upgrade, upgrade with Kempston... the Interface people.

<input type="checkbox"/> Disc Interface System.....	£99.95
<input type="checkbox"/> Disc Interface .....	£85.00
<input type="checkbox"/> Centronics 'E' Interface .....	£39.95
<input type="checkbox"/> Three-way connector .....	£15.00

<input type="checkbox"/> Joystick Interface	£9.95
<input type="checkbox"/> Pro Joystick Interface	£18.95
<input type="checkbox"/> Formula One Joystick	£16.95
<input type="checkbox"/> Formula Two Joystick	£11.95
<input type="checkbox"/> Junior Pro Joystick	£5.95

Name .....

Address .....

3

Access/Barclaycard

SU



# Rating system causes comment

WHERE is our friend Gilbert? Has he retired? Has he been sacked? Then work out a Chris or even Clare factor.

Without Gilbert, when I want to buy a game, I must go through every *Sinclair User* I own, searching for a review. Previously I could safely buy a game sure it was worth what I spent on it.

Please return that amazing game directory in the back of our trusty *Sinclair User*, I beg of you.

Steve Griffin, Harrogate, North Yorkshire.

● *Never fear. An updated Software Directory will be returning as soon as we have space for it.*

I AM glad to see that your games ratings have changed. I thought the Gilbert factor was totally unreliable. I cannot understand why Technician Ted only got seven, while Horace goes Skiing, a totally boring game with no variation, got an eight.

David Gee, Chesterfield, Derbyshire.

## Contempt for letters pirate

I AM WRITING to voice my thoughts on the piracy of articles. The offender is Daniel Rose, of Tonbridge, Kent, who had a letter published in Zap Chat — *Sinclair User*, June — giving infinite lives for *Alien 8*.

The pokes, and the complex machine code program were lifted from the May issue of *Your Spectrum*.

Daniel Rose has opened himself up, not to the acclaim of the readership of *Sinclair User*, but rather to their contempt for stealing the article.

I hope you're listening, Daniel Mud! And to anyone who has discovered some-

thing of interest, send it for publication. There are enough ideas to support the computing press, without the need for recycling.

Malcolm Paknadel, Cambridge.

## Games playing only a trend?

GAMES are an aspect of home computing but don't let the tail wag the dog.

Games playing among my acquaintances tends to be short-lived, they either become interested in developing their computer knowledge or they lose their interest in computers.

Games may be selling computer mags at the moment but don't forget tastes can be volatile.

John Taylor, Grantham, Lincolnshire.

## History is lost in space

GALACTIC warfare interspersed with a smattering of history — that was my impression when I read your review of *Starion* — June *Sinclair User*.

What history there may or may not be in the game I shall never know.

I would like to advise your readers that unless you have the razor sharp reactions of a Wild Bill Hickock, *Starion* is a rip-off, and its historical element will remain a closed book for ever.

J W Ewart, Leasingham, Lincolnshire.

## A plea for missing issues

A FEW months ago I got the urge to complete my collection of *Sinclair User*. I've gathered that issues one

to eight are not available.

I am wondering if someone out there would like to sell those back numbers.

E van Wouwe, Frans de Ceusterlei, 60, B2120 Schoten, Belgium.

## Captured in record time

I BOUGHT *Shadowfire* on May 14 and completed it in two hours and 10 minutes.

The only way you can complete it is by killing and capturing all 43 people on the ship.

I have just read June's *Sinclair User* and your review said it was hard!

P M Davies, Cumla Neath, West Glamorgan.

## Learning game nukes schools

FURTHER to your review of *Worldwise: Nuclear Weapons* in the June issue of *Sinclair User*, might I point out that *Worldwise* can be purchased from us at the Richardson Institute for Conflict and Peace Research, Lancaster University. Dr Paul Smoker, University of Lancaster, Lancaster LA1 4YF.

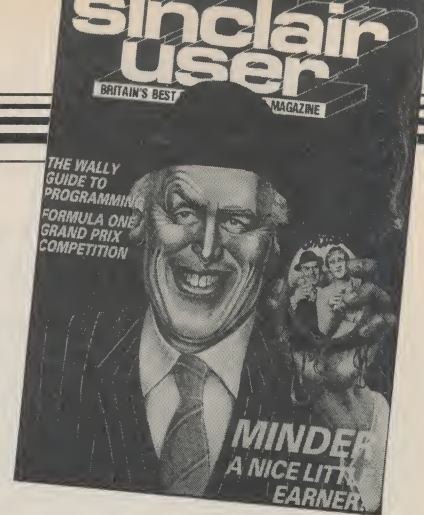
I REALISE there is concern over program piracy using school equipment, but surely the implied threat in your *Worldwise: Nuclear Weapons* review is taking things too far: "a study of nuclear weapons around the world aimed at secondary schools."

Ian Rhodes, Dukinfield, Cheshire.

## Quill cheats on adventures

IF YOU save your position in a Quilled adventure and then load it into another Quilled adventure, when asked 'what next?' you jump to a position near the end of the game with a score of 70 or 80 percent.

Clive Parsons, Newquay, Cornwall.



## Cover-up job on Arthur

I HAD to laugh when I read A Wilson's letter in the June issue about your covers.

Just 10 minutes earlier I had stood in my newsagents desperately trying to conceal the front cover picture of Arthur Daley!

Christopher Robinson, County Durham.

## Outrage over complex game

LAST NIGHT I spent three hours addicted to *Komplex*. I bought *Sinclair User* this morning — great, *Komplex* reviewed! Where's the Classic sign? Two stars?

Come off it, this game is fabulously addictive — it's the best game I have. You say the graphics are 'basic & wireframe', those on *Starion* 'superb 3D', but they are both similar effects.

A Crash reader, (Samuel Best-Shaw), Maidstone, Kent

● *Hah! A Crash reader — I might have guessed. Ed.*

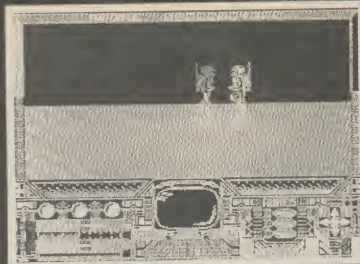
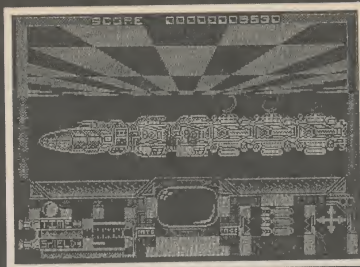
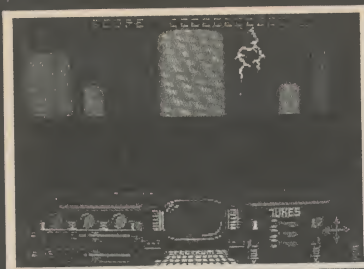
## Jack receives turkey award

I READ your magazine frequently and think the game reviews are excellent and the screen-shots are sharp and clear.

My turkeys of the month — *Ghostbusters* from Activision, *Road Racer* from Thorn EMI and *Jack and the Beanstalk* from Thor.

Jeremy Bye, Carlisle, Cumbria.





# GLASS

Battle your way to three enemy bases.  
Do you have the courage, stamina  
and skill to become a Game Lord?

**£7.99**  
**SPECTRUM 48K**

From

# QUICKSILVA

*The most powerful games in the Universe!*

Available from all good software shops.

In case of difficulty write to:

**QUICKSILVA Ltd.** Liberty House, 222 Regent Street, London W1R 7DB tel: 01 439 0666





# Go for gold in Finders Keepers

I HAVE finally completed Mastertronic's excellent **Finders Keepers**. Here are a few tips for those readers who don't know which objects to combine:

Philosopher's stone + iron bar = gold bar; pile of mud + spark of life = mud monster; empty bottle + model of Cutty Sark = ship in a bottle; broken sword + blacksmith = Excalibur.

To escape from the castle past the puss without boots, drop the sulphur and the charcoal on the saltpetre to make gunpowder. Then drop the magic flame and poor old puss gets blown to pieces.

To gain infinite lives just MERGE "" and place POKE 34252,0 behind the RAND USR command.

I have also found a useful bug in **Beach Head**. When driving a tank on the beach, if you shoot an enemy installation a score is printed over it. If you are close enough you can shoot the score before it disappears.

Once shot the score will stay there and can be shot again and again to get extra points. The score acts as an object and your tank will be destroyed if you touch it.

Marc Kavanagh,  
Cheshire.

## Hungry spy is knocked for six

I CLAIM to be the **Spy Hunter** genius, I've scored 397,226 on my sixth game.

Lee Waters,  
Chesterfield.

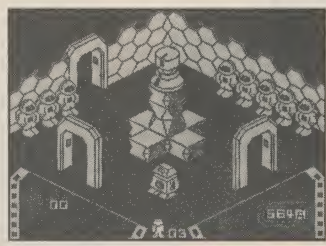
## Alienation of Knight Lore

WE HAVE just completed Ultimate's **Alien 8**. We managed to crack the game in two hours, 53 minutes, 43.87 seconds.

We would also like to warn any would-be adventurers of the hopeless ending after successfully activating all 24 cryogenic chambers.

An almost identical game to **Alien 8** is **Knight Lore**. Anyone who owns either game would not be advised to spend £10 on the other.

Gordon Whyte and  
Grant Fergusson,  
Paisley,  
Glasgow.



## Beating the hell out of Styx

I HAVE reached a score of 1,318,890 on **Styx**. I played the game for over one hour. When I turned the computer off, I still had over 40 lives left. Can anyone beat that?!

Dales Pearce,  
Leeds

● *Amazing! To think some people are still playing Styx — can anyone beat that?*

## The surprise from Styx

I HAVE got \$24,000 on **Ghostbusters**; lapped round Dr Franky twice; rescued Esmerelda on **Hunchback**; beat the computer at **Match Day** in the cup final; blew up Moscow in **Raid over Moscow**, and hit all the targets in **Beach Head**, blowing up the big gun.

However, can anyone beat my score on **Styx**? I even surprised myself by scoring over half a million!

The secret is, on the first phase, to get to the door on the right, but do not go down into the river. The spiders cannot kill you there, by the way. When I get there I turned it off with 38 lives left!

Paul Clark,  
West Bridgford,  
Nottingham.

● *Another blast from the past.*

## The last key to backpacking

I HAVE BOUGHT Fantasy's arcade adventure **Backpacker's Guide to the Universe** and I'm having great difficulty.

The instructions say you need four keys to get through a gate but I have only found three and one of these is hidden behind a gate.

Can anybody give me some tips on how to complete the game?

Kevin Watts,  
7 Palmer Drive,  
Lakenheath,  
Suffolk.

## Wizard kill by Bruce Lee

I HAVE **Bruce Lee** from Ocean and I have completed it many times. My highest score is 1,017,700 and I have killed the wizard 38 times.

I claim to be an all round first class **Bruce Lee** professional player. I could have kept going but after four hours I aborted with 22 falls left — cop that then!

Neil McLoughlin,  
Crawley,  
Sussex.

## Home team is on the ball

I CLAIM to be the world's best **World Series Baseball** player. I played a match of nine innings and won 117 to 1. I hit eight home runs, four consecutively. I made 15 catches.

When I had gone over 99 the scoreboard showed the

score as :0. My final was :7 — in other words, 117.

World's best  
baseball player,  
St Helens, Merseyside.

## High scorer is over the moon

RECENTLY I bought the game **Moon Cresta** by Incentive Software. I felt very pleased when I broke the 30,000 point barrier and gained access to the passwords. Immediately I sent off the entry form to enter the competition.

The entry form states that the prize will be an original arcade machine of **Moon Cresta** and that the winner will be announced on December 31. Your reviewer of **Moon Cresta** stated that the prize is a video recorder and that the prize will be awarded to the first person who gets 30,000. Have you got it wrong?

Mark Jakes,  
Sandy, Bedfordshire.

● *We got it wrong. Humble apologies. Ed.*

## Bloodaxe score has the edge

JUST A LINE to say that I completed **Brian Bloodaxe** on May 11. My high score is 147,407. I have sent proof of completion to The Edge.

Michael Devlin,  
aged 12,  
St Helens, Merseyside.

## Taking the plunge

TO OBTAIN unlimited divers in **Fantastic Voyage** enter the following to load and run the game code:

10 CLEAR 30791:  
LOAD "VOYAGE"  
CODE: POKE 54492,167:  
BORDER 0: PRINT USR  
53248

The game will still end if the main body overheats during infection.

S G Miles,  
Wallasey, Merseyside.



# PERIPHERAL POWER



## CHEETAH "SWEET TALKER"

Based on an allophone system, program any word or phrase, providing unlimited speech. Now make your Spectrum talk. Compatible with Interface I & II and Spectrum + ..... **£24.95**



## CASSETTE/DATA RECORDER

For your home computer, will allow easy loading of even the most stubborn program. Features include single key record, mains/battery, accepts standard computer leads and 5 pin DIN connector. Also provides exceptional audio quality for fine listening.

(Batteries not included) ..... **£24.95**



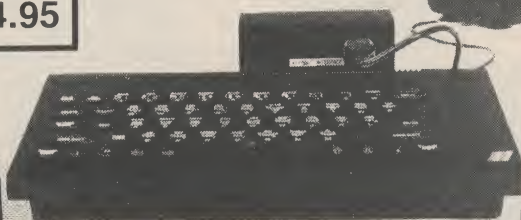
## MEGASOUND

For 48K Spectrum and ZX Spectrum +. Achieve amazing sound capabilities that your Spectrum has been lacking. Just plugs into the user port at the rear of your computer and amplifies sound through your T.V. .... **£10.95**



## 32K RAMPACK

Upgrade your 16K ZX Spectrum now! The Cheetah 32K Rampack simply plugs into the user port at the rear of your computer and increases the memory instantly. **£39.95** to 48K



## SPECTRUM JOYSTICK INTERFACE

Simply plugs into the user port at the rear of the computer and accepts any Atari style joystick including Quickshot and Kempston.

Comes without rear edge connector at ..... **£11.50**

or with connector which allows other peripherals to be stacked up at ..... **£12.75**

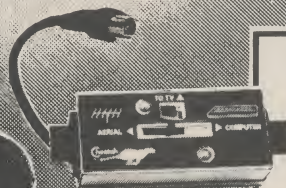
## 56 WAY EXTENSION CONNECTOR

Cheetah's 6" long extension cable enables Spectrum peripherals to be distanced from your computer .. **£7.95**



## HI-STAK FEET

These instantly applied stick on feet for your ZX 81, Spectrum, New Brain, VIC, TRS etc. tilt the computer and make your keys easier to see and more enjoyable to use, allowing smoother programming. .... **£2.99**

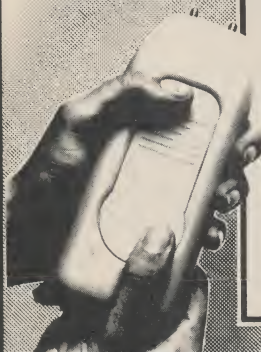


## AERIAL SPLITTER

Cheetah's neat splitter unit complete with self adhesive pad allows you to keep your T.V. and computer aerial leads plugged in without disturbing the picture ..... **£2.25**

## R.A.T.

Conventional joysticks are dead! The Cheetah Remote Action Transmitter is the most sophisticated computer controller available! Infra red transmission - so there are no leads trailing across the living room. Touch control, extremely fast, can be used with Cheetah RAT/Kempston compatible software. Complete with receiver / interface. **£29.95**



## EXTRA LONG AERIAL LEAD

Over 15' long. Our super lead will allow you to sit back away from your T.V. and enable you to play games in the comfort of your armchair. .... **£1.50**



Prices include VAT, postage & packing. Delivery normally 14 days. Export orders at no extra cost. Dealer enquiries welcome.

Cheetah, products available from branches of John Menzies WHSMITH Rumbelows WOOLWORTH Spectrum dealers and all good computer stores.

All Cheetah Peripherals have rear edge connectors for compatibility with all Sinclair accessories.

**Cheetah**  
**Marketing**



Dept SU

Cheetah Marketing Ltd. 24 Ray Street, London EC1R 3DJ Tel 01 833 4909 Telex 8954958



SINCLAIR USER Classics are programs which, in our biased and eccentric opinion, set new standards in software. They are the programs by which the others should be measured. If you buy no

other software, buy these. No self-respecting Sinclair user should be without them.

Software reviews carry a star rating, the basis of which will be value for money. Programming, graphics, speed, presentation, addictive qualities and the rest are taken into account.

### Guide to ratings

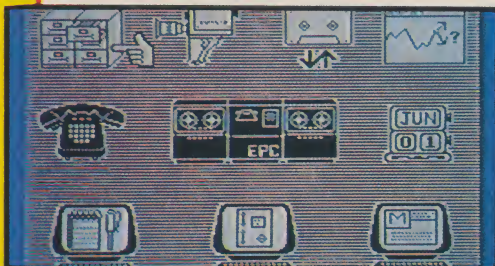
- ★★★★★ 24 carat. Buy it
- ★★★★ Value for money
- ★★★ Nothing special
- ★★ Over-priced
- ★ A rip-off

## EXCLUSIVE

**WARNING** — possible breach of the Fourth Protocol . . .

As John Preston, and newly appointed head of C1(A) it is your job to look after military security and, ultimately, uncover a British traitor and a plan to destabilise a nation of the Western Alliance.

The game comprises three sections,



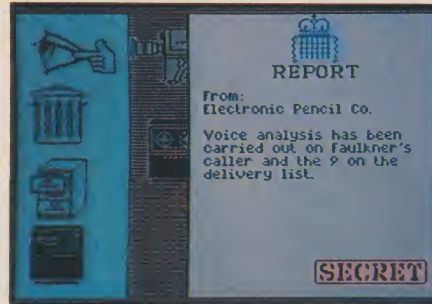
called The NATO Documents, The Bomb and The SAS Assault. In order to get into the last two you must use a code which is given to you in the previous section.

You begin in your office, reading memos sent by your superiors, using the phone, despatching watchers to tail suspects and receiving reports on the movements of potential traitors.

The game is controlled using a series of innovative and visually attractive icon screens. All input is made by moving a pointing finger to one of the icons and pressing ENTER.

Three terminals at the bottom of the screen provide contact with the outside world. The one on the left is used to read reports from watchers, the middle one gives you access to your reports and the one on the right allows you to read your memos.

File access is gained through the CenCom computer located in the basement of your office building. You can



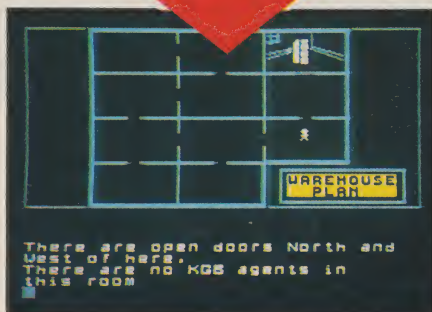
put your own files on the system or run checks and voiceprints on characters.

Files not held on CenCom can be accessed by ringing Blenheim and entering the correct code.

Once you have the file code the second section of the game can be

## THE FOURTH PROTOCOL THE GAME

### SINCLAIR USER CLASSIC

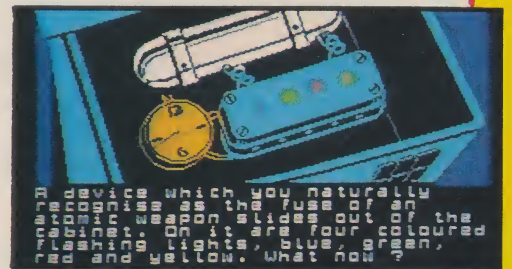


loaded. The Bomb covers a trip around the building picking up useful objects for your search across Britain to find the nuclear device.

The building has four floors, connected by lifts. Although icon-driven, the options are flexible enough to allow characters to talk to you and for you to move easily and quickly.

Once you have located the bomb you can access the third and undoubtedly the weakest part of the game, The SAS Assault. You must arm your squad and place them around the building using a schematic plan. In this sequence you use simple verb/noun sentences with a list of words available on request.

Having blasted your way to the room containing the bomb, you have only seconds in which to defuse it, all the while fighting off KGB guards.



Two seemingly irrelevant bits of information, chanced upon earlier in the game, are necessary to successfully render the device harmless.

The Fourth Protocol is the work of the Electric Pencil team and that is shown in the professional polish of the game. The icon graphics are excellent and the speed is incredible.

Although some icon actions, such as those used for movement, can take longer than traditional adventure text input, their use generates a high tech atmosphere in keeping with the game.

It is one of the most enjoyable, complex but easy to operate games which I have played in a long time. Even if you do not like the Frederick Forsyth's book you will, nevertheless, like the software.

*John Gilbert*

**Publisher Century/Hutchinson**  
**Price £12.95 Memory 48K**  
**★★★★★**

*more software on page 18*



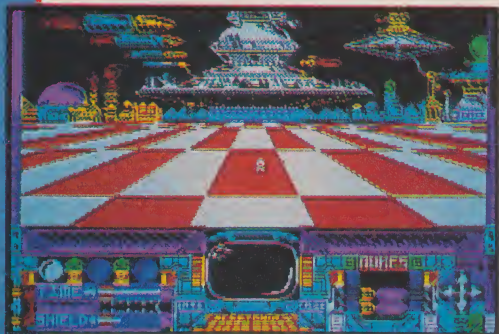


# EXCLUSIVE

## GLASS

COME HERE glassy-eyed Earthling. Do you want a job working for the Game Lords?

There are good job prospects for anyone entering the Game Lords'



Alien Strike Simulator – **GLASS**. All you have to do is zap your way through hundreds of screens of 3D aliens and steer through chasms where coloured pillars block your way. All that action is interspersed with the relatively easy job of shooting radar antennae from a variety of alien space ships.

You have only four power shields and energy for those is used up quickly. Not to worry, the simulator provides an option which allows re-entry when all your shields have collapsed. You will be at the same level but your score will be re-set to zero.

Once past the hundreds of many-legged or robotic aliens, the killer tanks which rise and retreat over the horizon lobbing fireballs, and the corridors of columns, you will get a glimpse of one of the alien cities. It is a non-participant scenario but you have the satisfaction of watching the city being very untastefully nuked. The



effect is stunning as every pixel of the city explodes off the screen. Watch carefully as you will not see this again for another couple of hundred screens.

**GLASS** has stunning 3D effects and is value for money both in terms of quality and quantity of special effects and aliens. Add it to your library of games if you are an arcade fanatic. It takes a lot of beating.

*John Gilbert*

**Publisher** Quicksilver **Price** £7.99  
**Joystick** Kempston, Sinclair  
**Memory** 48K  
★★★★

# EXCLUSIVE

## Hypersports

GET INTO training, sports fans, for a compilation of sporting simulations from Imagine '84.

**Hypersports** is licensed from the Japanese amusement arcade game of the same name, and should not be confused with **Daley Thompson's Supertest**, about to be released by sister company Ocean. On the other hand, it does the same sort of thing, and will test your biceps to the utmost as you pump the joystick in agony.

Swim two lengths of the pool, remembering to breathe. The graphics on this event are the poorest of the six. There are three other swimmers, and the end of the pool moves towards the swimmers, rather than the swimmers moving at different speeds.

The game gets its feet on firmer ground with the clay pigeon shooting. The twin sights move up automatically, and you must time your shots to hit

the clay pigeons, or skeets.

The vault has the athlete trying to somersault as far as he can from a gymnasium horse, and an archery contest involves shooting at a moving target, taking wind and elevation into account.

The triple jump will be familiar to Decathlon players as a more complex version of the long jump, but the real killer is the weightlifting. An hilariously musclebound, moustached



klutz creaks and groans in his efforts to raise the dumb-bell, and you must choose the weight at which you want to compete. This is the event which really taxes your joystick wrist, and risks terminal damage to the keyboard.

The graphics are more varied and generally better than **Daley Thompson's Decathlon**, with much more humour. You play through the sequence until you fail to qualify three times, and each new round raises the qualifying level. There are tables for the three best results at each event, and the game certainly presents a



challenging experience.

**Hypersports** is almost assured of success in the shops, but whether it is better than **Daley Thompson's Decathlon** is another matter. The programming is certainly of similar excellence, except for the swimming event, but the sports themselves do not form a coherent sequence, in the way that the 10 decathlon sports do.

It is certainly superior to the current crop of sports simulations, and it will be interesting to see how it stacks up against **Daley Thompson's Supertest**, shortly to come.

*Chris Bourne*

**Publisher** Imagine **Price** £7.95  
**Joystick** Sinclair, Kempston, Cursor  
**Memory** 48K  
★★★★





## Frankie Goes to Hollywood

A SHADOW stalks the cloned terraces of monotonous streets. You are that shadow. You will remain a shadow unless you reach the Pleasure Dome, the world within the world within the world in which you live.

Who can take you to the Pleasure Dome? Frankie can. Move your shadow through the screens of kitchens, lounges, dereliction and prissy suburban streets, collecting what may help. Floppy disks open worlds of arcade fantasy where aircraft bomb Liverpool, where only you can save the lives of your friends. There's a murder to be solved; eight suspects — where's the clue? In a revolting pair of socks perhaps, but there are many entrances to the Pleasure Dome.

Screens explode with colour as windows open out onto new scenes — walk the shadow from behind and step

into the frame, step into pleasure. Shoot Thatcher, watch Reagan and Gorbachev spit at each other. Once in the Dome you're no longer a shadow, but there's a dozen or more scenarios within the game, and four symbols to collect before you reach the centre.

Text intrudes slightly in the form of clues — 'the sea of holes is a sea of rooms' — triggered by the successful completion of problems. You must



recognise the alternative possibilities of ordinary objects — light switches, telephones, televisions — and experiment.

Faithful to the spirit of the band, if necessarily less outrageous, Frankie is a beautiful program, an adventure of great imagination, with some superb programming techniques in the use of expanding windows and icon-like objects to pick up and use. The screen shots shown here are from a pre-release version, but they give some



indication of the quality.

The game comes with a 15 minute live version of *Relax* supplied on a separate cassette, recorded in the States and previously unreleased. The reverse side of this tape features playing tips for the game, narrated by Patrick Allen.

Symbols × Shadow = Frankie Goes to Hollywood. Frankie × Spectrum = Buy it.

Chris Bourne

Publisher Ocean Price £9.95  
Memory 48K Joystick Sinclair Cursor  
Kempston  
★★★★★



## Give My Regards to Broad Street

IF LURKING around London underground stations is your idea of a fun time then *Give My Regards To Broad Street* ought to appeal.

Argus informs us that the game has been okayed by ageing ex-Beatle Paul McCartney, presumably because the

plot of the game closely resembles the film. In other words, little happens and it's corny.

You are Paul, and if that doesn't put you off, you must travel around London by car trying to find the members of your band on the run. You must also pick up chords which have been lost from the hit song *No More Lonely Nights* — which still got into the charts despite my best efforts. You have 24 hours to find your crew.

With luck you will eventually learn to manoeuvre your temperamental vehicle and stop at a station as one of the characters is about to go in or come out. You must wait around until you pick one up, together with chords, but beware the wheel-clamping traffic wardens.

The game is technically excellent. There are two types of screen. The first display shows your car on the road map of London. Underground

stations are highlighted and much effort has gone into producing a detailed map of the capital. There is also a radar screen at the bottom of the screen and information about characters who have just gone into or left stations.

The other screen depicts an underground station and shows you waiting for your friends. Every so often a warden comes along and you must rush back to the car.

It is unfortunate that such an obviously brilliant team of programmers did not have a better plot with which to work. Surely the film included more details than lost friends and musical notes. On second thoughts, perhaps not.

John Gilbert

Publisher Argus Price £7.95  
Joystick Kempston Memory 48K  
★★★

more software on page 20





## A View to a Kill

SILICON Valley is in danger of obliteration and 007 is sent to fulfil another improbable mission in Domark's **A View to a Kill**.

In order to destroy the chip industry, Max Zorin, mad genius, has planted a massive bomb in some disused mines beneath Silicon Valley. When it detonates, the San Andreas Fault will open up and tip the lot into the Pacific. Why not do something simple like poison the water?

There are three games, each played



in different locations and linked by code numbers.

You start in Paris. Just as you are about to be told the key to Zorin's plan, Mayday – played by Grace Jones in the film – takes a pot shot and kills

your informant. A mad car chase follows. Mayday jumps from the Eiffel Tower and descends by parachute. You jump into a taxi and chase through the city to capture her.

The screen is split horizontally. The upper half is the 3D perspective view as seen through the windscreen and the lower half is an aerial view depicting road blocks, police cars and the



drifting parachutist.

Having captured Mayday, you load up in San Francisco for the next section set in the burning City Hall. Stacey, the obligatory blonde, is trapped in a lift and must be rescued. This section is an icon driven arcade adventure and is surprisingly easy to use.

A clue to Stacey's rescue can be found in the film, which is closely followed. There are around 75 rooms in the building, many holding objects vital for her rescue – a picture of the burning Hall is included showing your position in relation to the fire. The



graphics depicted in this review were taken from a pre-production copy of the game.

The final game places you deep within the mines. Mayday returns in this scene, though you may have to find her first. Only she can winch you down to the ticking bomb and winch you back with the detonator.

Objects litter the mine and can be used in the same manner as those in City Hall. The grappling hook is the first you will stumble across and is vital. Conveyor belts may be activated – but tread carefully.

You can play along to the original Bond theme tune, to Duran Duran's single of the same name or switch off for blessed quiet and a chance to hear Bond introduce himself: "My name is Bond, James Bond".

Clare Edgeley

**Publisher** Domark **Price** £10.99  
**Memory** 48K **Joystick** Sinclair  
**Kempston**, **Cursor**  
★★★★

## Falcon Patrol II

AS PILOT of a souped-up Hawker Jump Jet with the latest in ATG missiles you must blast the enemy helicopters out of the sky. Thrills. Once you have completed one sortie and destroyed a wave of 'copters, you move up a level of competence and take on another wave.

The enemy general is a complete imbecile as his pilots rarely fire at your

VTOL jet and occasionally even have a go at each other.

The author has tried to add some realism to the game. If you are hit by shrapnel you dive to the ground and



explode. Also you must re-arm and take on fuel from platforms during your mission. One false move and you could crash.

Mediocre 3D graphics and blipish sound are compensated by the manoeuvrability of the aircraft and the ease of aiming the weapons. The game is nevertheless too easy. It's like shooting fish in a barrel.

John Gilbert

**Publisher** Virgin Games **Price** £6.95  
**Memory** 48K **Joystick** Kempston  
★★★

## Nicotine Nightmare

THIS GAME is sufficiently unplayable to send any non-smoker straight back to the pack. It is boring, slow and written in Basic.

The ultimate aim is to rid the world of cigarettes. Before stamping out the fag factory you have to prove your determination in a silly little test

which is virtually impossible to complete.

Extinguish six cigarettes out of 10 happily burning ones. Every time you pour water over a glowing tip a little demon creeps up to the sodden dog-end and relights it.

Perseverance finally pays off and the next task is to get into the factory. Dodge and jump rolling cigarettes and the irate shop steward, and turn off all the cigarette machines.

More could have been made of

**Nicotine Nightmare.** The pace, graphics and feel of the game is about two years out of date.

Clare Edgeley

**Publisher** Atlantis **Price** £2.99  
**Memory** 48K **Joystick** Kempston  
★★

more software on page 22



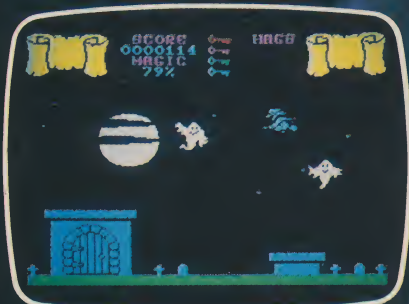


PALACE SOFTWARE PROUDLY PRESENTS

# CAULDRON

A spectacular new arcade  
adventure game from  
Palace Software that  
sets a new standard  
in graphic realism.

£7.99.



**FREE GAME**  
Cassette includes  
previously unreleased  
Spectrum version of  
**THE EVIL DEAD**

Explore an entire world in 'Cauldron' – The first game ever to feature  
scrolling shoot-'em-up and platform jumping.

**Available from all good Computer Games Shops or direct from  
Palace Software, 275 Pentonville Road, London N1 9NL.**



Dear Palace Software,  
Please send me the following cassette(s):-

Cauldron (Spectrum) @£7.99

Valkyrie 17 (Spectrum) @£9.99

Please add 80p P&P to your order. Payment  
by cheque to Palace Software, Postal Order  
or by Access/Barclaycard No. \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Postal Code \_\_\_\_\_



## EXCLUSIVE

### Cauldron

HEARKEN witches everywhere, play this game if you dare, defeat the Evil Pumpkin King to regain the broomstick from within.

In **Cauldron**, from Palace Software, the instructions are contained in eight rhyming verses which describe the basic scenario — it is up to you to figure out the puzzles.

The Evil Pumpkin has stolen the witch's golden broomstick and the only way it can be retrieved is to brew



a spell which will gain her entrance to the Pumpkin's Lair. The spell's six ingredients are to be found in the rhyme and lie in the 64 caverns underground.

Above ground is variety of terrains — graveyards, woods, mountains, oceans and islands. There are four doors leading to the caverns, each



opened with a cunningly hidden coloured key. Ghosts, killer seagulls and bats deplete your magical powers by hitting you.

You can fire at them though that also decreases your magic and the best tactic is avoidance. You have nine lives and each time you die you tumble off your broomstick in a spectacular fall.

Finding and picking up the spell's



ingredients is no easy task. You may have to approach them in a roundabout way or find objects to place them in. Again, whole legions of nasties try to send you to the hereafter.

There are a number of teasers in this superb pictorial game with no clues offered in the instructions. Trial and error is the only way through it.

**Cauldron** has no sound other than the odd spectral beep, but the graphics are brilliant and colourful. Unfortunately, they flicker occasionally and the colours tend to merge. **Cauldron** is nevertheless a pleasing and playable game.

A bonus is to be found on the B side which contains the **Evil Dead**, never released for the Spectrum. You will be getting two excellent games for the price of one.

Clare Edgeley

**Publisher** Palace Software **Price** £7.99  
**Memory** 48K **Joystick** Sinclair, Kempston  
★★★★★

### Lightmagic

THERE have been graphics designer programs before — notably **Melbourne Draw**. **Lightmagic** takes ease of use a step further and provides a comprehensive package for would-be screen designers.

The program can operate using a joystick or cursor keys. The menus are exceptionally clear and easy to toggle through. There are five modes.

Pen mode allows you to draw on screen as if you were using a pencil,

with the added advantage of a rubber band feature for odd angles.

Circle and Fill commands are also available, although the Fill command can cause weird results due to the Spectrum attributes. To overcome that there is a Grid command which produces a grid of 8x8 squares on the screen, avoiding colour clashes.

In Brush mode there are 10 types of brushes which range from solid to airbrush; spectacular results can be obtained with these, especially as brush size can be altered.

Block mode can be used to move, mirror and rotate blocks of the screen

and Text mode allows the addition of text. There is also a UDG designer which makes graphic designing easy.

As if all that were not enough, there is an enlargement feature. A section of the screen can be magnified four times — useful for fine tuning. Adding and changing colour is done by pressing X and choosing another colour.

The facilities offered are impressive and it can be recommended without reservations.

Theo Wood

**Publisher** New Generation  
**Memory** 48K **Price** £14.95  
★★★★

### Helichopper

ANOTHER original game of 'grab the survivor and we'll bomb the rest' has been released by Firebird.

Though **Helichopper** scores nothing for innovation, it is saved from being totally awful by fast and clear graphics.

Zip down in your copter and spend a harrowing few moments ferrying a

little pink Clone across a duck pond to deposit him on a ladder.

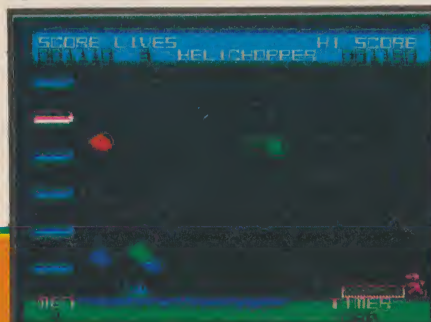
You can only deposit a Clone when the rung above you changes white.

Bombs and balloons move slowly upwards to annihilate you and killer

ducks are rife. The chopper has unlimited bombs and you can rain those on the heads of the hapless birds.

Further screens are about as exciting as a wet sponge and follow the same pattern with minor differences.

Clare Edgeley



**Publisher** Firebird **Price** £2.50  
**Memory** 48K **Joystick** Kempston, Sinclair Cursor  
★★

more software on page 24



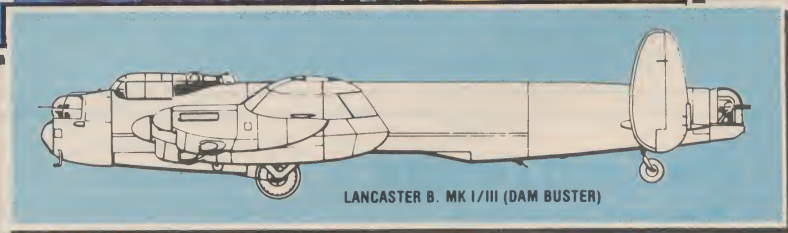
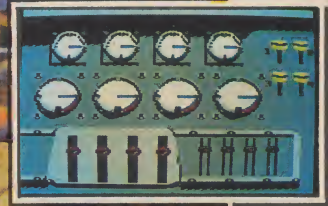
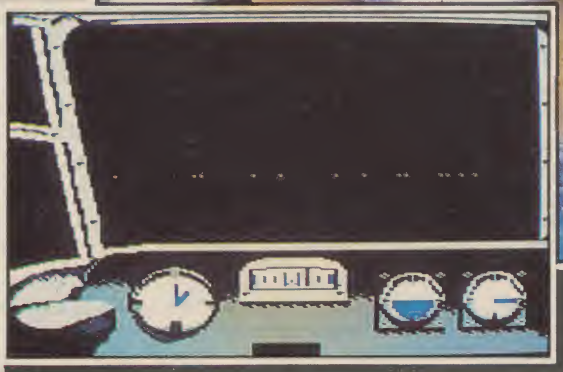
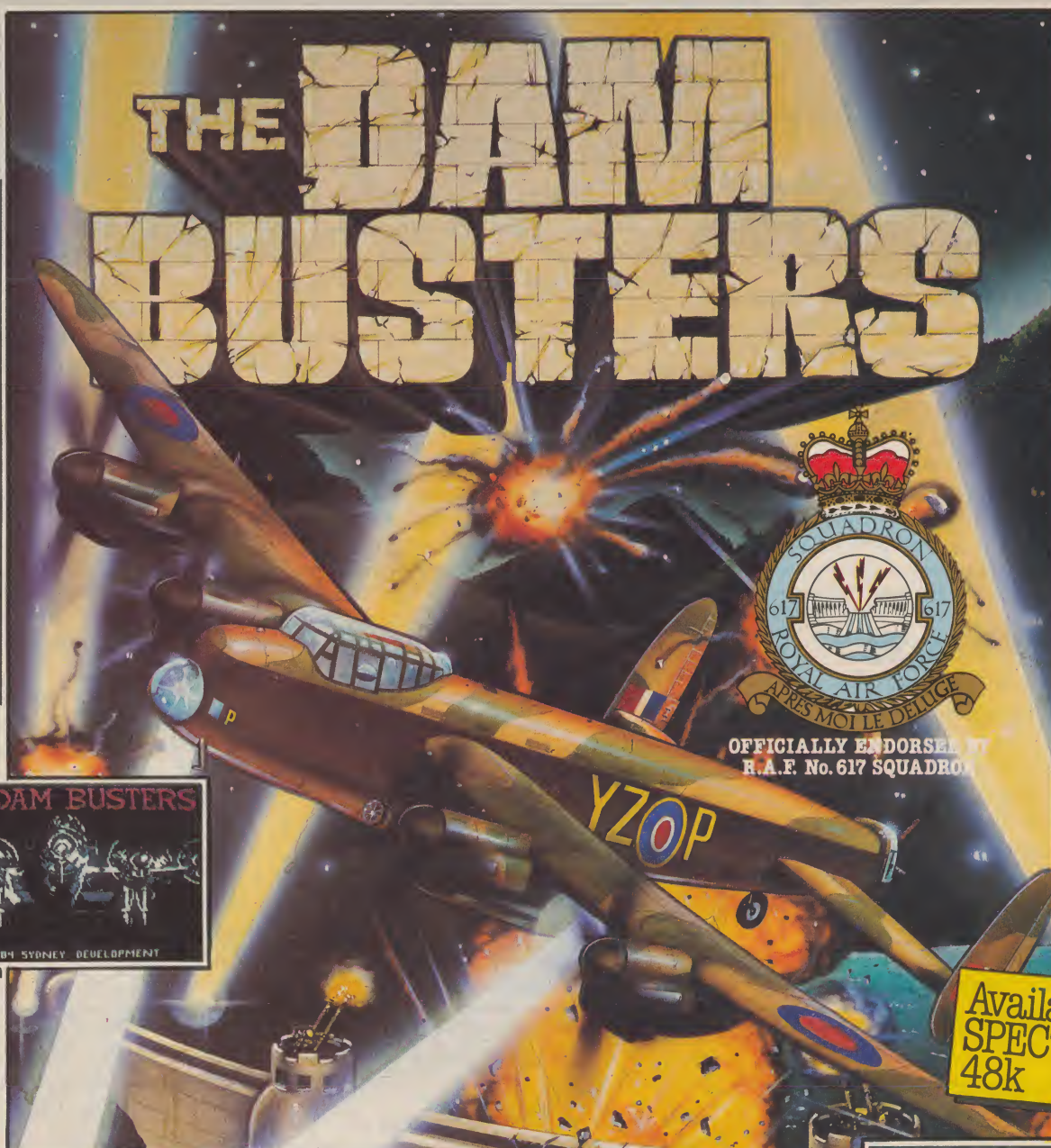
# Play THE GAME everyone's talking about:



## BUSTERS

3 and you have been on 617. Your mission at power dams of the busters is the latest S Gold, a cross between an arcade game that requires you put fingers to the (stick).

ot only do you pilot take on the roles of the er, bomb aimer, navigator, and second e adron Leader option monitoring the status a ew! As you can see ur wits about you. Each of these option en which can be a



OFFICIALLY ENDORSED BY  
R.A.F. No. 617 SQUADRON

Available for  
**SPECTRUM**  
48k £9.95

It's 21.15 hours on the evening of May 16th, 1943. A flight of specially prepared Lancaster bombers is leaving R.A.F. Scampton for Germany.

After months of planning No. 617 Squadron are at last embarking on an operation destined to change the course of World War II.

Your objective is to destroy the Mohne, Eder and Sorpe dams, thus crippling Germany's industrial heartland.

This detailed and authentic simulation allows you to play the part of **PILOT, NAVIGATOR, FRONT GUNNER, REAR GUNNER, BOMB AIMER** and **FLIGHT ENGINEER**.

You fly at low altitude over Europe, on the lookout for deadly ME110 night fighters, dodging barrage balloons, searchlights and flak. At the target you'll need all your nerve and skill to control the aircraft and release your deadly payload whilst under enemy attack.

Game features include: **SUPERB GRAPHICS & SOUND · REALISTIC JOYSTICK CONTROL · PILOT'S SCREEN & INDICATORS · MULTIPLE SCREEN NAVIGATOR'S MAPS · FRONT & REAR GUNNER'S SCREEN · BOMB SIGHT SCREEN · ENGINEER'S INDICATORS.**

Game Package includes: Comprehensive flight instructions, maps and confidential documents including authentic material by Barnes Wallis and Wing Commander Guy Gibson.

Designed and Developed by Sydney Development Corporation. Licensed in conjunction with International Computer Group. Manufactured in the U.K. by U.S. Gold Limited, Unit 10, Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY. Telephone: 021-359 8881. Telex: 337268.



64

vant number between  
n your 64.

also have the choice  
n (starting near the d  
action), Flight Lieut  
he English Channel  
er (taking off from Sc  
substantial accompan  
tial reading if you wa  
where. In addition to  
uctions, it includes V  
fing documents, info  
raft and other additio  
rmation.

Graphics add to the g  
nts below, search lig  
y and splashes if your  
It is a very complex g  
stantly be on the lo  
inking ahead to plan  
eer you clear of ener  
maintaining the corre  
nd speed of your air  
It will take a while  
what and the speed,  
required for various  
persvere you will c  
satisfying game.

Graphics: \*\*\*\*  
Sound: \*\*\*\*  
Playability: \*\*\*\*  
CCI Rating: \*\*\*\*  
Company: US Gold  
Industrial Estate, H  
Birmingham. Tel:

Graphics: \*\*\*\*  
Sound: \*\*\*\*  
Playability: \*\*\*\*  
CCI Rating: \*\*\*\*  
Company: US Gold  
Industrial Estate, H  
Birmingham. Tel:



## Charlie and the Chocolate Factory

HAVE A sticky time in **Charlie and the Chocolate Factory**, based on the renowned children's book by Roald Dahl.

There are five games — four arcade and an arcade adventure. The first four must be completed to gain entry to the final program.

In the first game Augustus Gloop has been sucked into a mass of tubes in the sweet machine. You must run left and right across the screen changing the direction of the tubes so that Augustus will flow into a flask. A

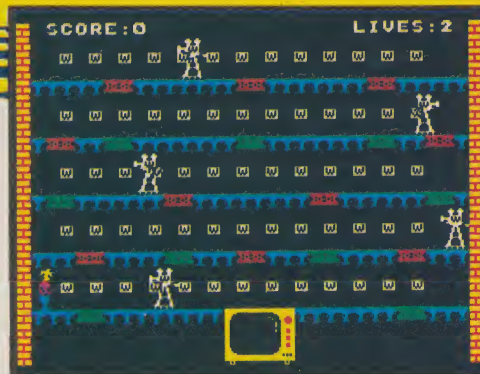
pretty game but boring and frustrating to play.

The second game takes you to the juicing room where Violet Beauregarde is being squashed by blueberries.

Veruca Salt has enraged the squirrels in another room and dropping poisoned nuts is the only way to prevent her being thrown down a rubbish chute.

In the last of the four, Mike Teavee is being chased by cameramen out to shrink him with rays of light. He must jump from level to level, picking up Wonka chocolate bars.

The final program is really a 43 room **Jet Set Willy** game and difficult to get into, even in the practice mode. You have to guide Charlie around the



factory and collect six golden keys so that he can enter the Great Glass Lift.

**Charlie and the Chocolate Factory** palls after a very short time. However, as the package comprises five games and the book it must represent reasonable value for money. *Clare Edgely*

**Publisher** Hill MacGibbon **Price** £9.95  
**Memory** 48K **Joystick** Kempston  
★★★

## Icicle Works

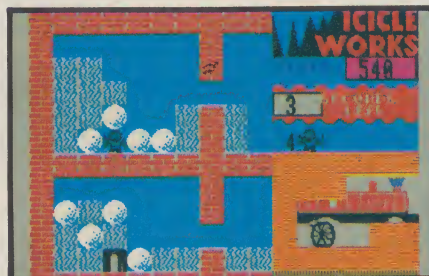
ORIGINALITY is not a word which springs unbidden to the mind in **Icicle Works** — a game that is based on that old arcade favourite, **Pengy**.

As you dash around the icefield with its precariously balanced snowballs, you have to pick up sections of a jigsaw which make up a picture of a toy.

You will almost certainly be squashed by snowballs, or mauled by

cuddly, man-eating polar bears and penguins. There are 13 levels and in each it becomes harder to release the pictures.

The harder levels pose more prob-



lems in that you have to kill penguins or polar bears before picking up sections of picture.

Block graphics make up the game and the screen scrolls up, down, left and right in probably the most jerky fashion we have seen for a long time.

**Icicle Works** is mere kindergarden stuff. Ageing **Pengy** fans and the rest — stay clear. *Clare Edgely*

**Publisher** Statesoft **Price** £6.95  
**Memory** 48K  
**Joystick** Sinclair, Kempston, Protek  
★★

## Assembler

ASSEMBLY CODE is entered from Basic using REM instructions which can make things easier, if you don't mind entering all those extra instructions. One reason for using Basic is that you can MERGE lines of code together. While that is true most good assemblers these days are able to MERGE routines easily.

The package is a two-pass assembler

which normally sends code to RAM above STKEND.

The power of this utility is in its test facilities which include all the usual system diagnostics such as breakpoint insertion, single step through instructions and Trace. Also included are two powerful facilities, Input Instruction and History.

Input Instruction allows the programmer to enter new mnemonic instructions into the code before it is tested.

The History facility provides a display of the changes which the machine code program has made within the last 10 instructions.

It is not the sort of assembler which is a joy to use. The Test facilities mentioned are useful but do not make it worth the expense when there are other, better, products on the market.

*John Gilbert*

**Publisher** Roybot **Price** £9.95  
**Memory** 48K  
★★

## Plan and Design Your Garden

PLAN AND DESIGN your garden, comes with the book *Garden Planning and Design* — a standard gardening tome with hints on planning and a short section dealing with plants and flowers.

The program content is minimal; 'design' allows you to deposit shapes for vegetables, flowers, buildings and paths on the screen by means of a cursor, while 'diary' is a monthly gardeners' diary and very basic.

Curious anomalies occur, entering 'October' and 'rose' gives you the instruction that roses can be planted next month. Entering 'November' and 'roses' brings up the reply, 'no in-

formation found'. Hard luck if you didn't catch the October entry.

There is nothing here that cannot be found in any reasonable gardening book. The whole package is outrageously overpriced. *Theo Wood*

**Publisher** Blandford Press  
**Memory** 48K **Price** £14.95  
★

more software on page 26



# CUMANA Special Price Offers!

**DOUBLE DENSITY DISK INTERFACE FOR THE SPECTRUM + FROM CUMANA**  
At last Spectrum owners can take full advantage of the speed, convenience and reliability of Cumana's 5¼" floppy disk drive systems with storage capacities of up to 1.4MB available.

The interface just slots into the back of the Interface 1 for networking enabling Microdrive and floppy to run in complete harmony! It comes complete with utility diskette and manual – and uses only 128 bytes of Spectrum memory!

Cumana are offering the following upgrade systems:–

## SYSTEM OFFER 1:

Double density interface with Cumana's 5¼" slim line CSS 250 (40 track single sided drive) **£205.95**

## SYSTEM OFFER 2:

Double density interface with Cumana's 5¼" slim line CSS 500 (40 track double sided) **£224.95**

## SYSTEM OFFER 3:

Double density interface with Cumana's 5¼" slim line CSS 1000 (40 track double sided drive) **£245.95**

## SYSTEM OFFER 4:

Double density interface with Cumana's 5¼" slim line dual CDS 500 (80 track double sided drive) **£309.95**

## SYSTEM OFFER 5:

Double density interface with Cumana's 5¼" slim line dual CDS 1000 (2 × 40 track single sided drive) **£349.95**

## SYSTEM OFFER 6:

Double density interface with Cumana's 5¼" slim line dual CDS 2000 (2 × 80 track double sided drive) **£374.95**

All the above include Beta Dish Controller, P.S.U, instruction guide and all connecting cables. Limited offer, all products are subject to availability. All prices are inclusive of VAT. Delivery extra E&OE.

## ORDER FORM

To: CUMANA LIMITED, THE PINES TRADING ESTATE, BROAD STREET, GUILDFORD, SURREY GU3 3BH. TEL: 0483 503121.

I wish to order (Qty) \_\_\_\_\_

I enclose cheque/PO\* for \_\_\_\_\_ or debit my access/visa\* card no. \_\_\_\_\_ which includes £9.14 postage and packing \*Delete as applicable

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

Please Tick

System 1 at £205.95 ☐

System 2 at £224.95 ☐

System 5 at £349.95 ☐

D/D interface only at £99.95 ☐

System 3 at £245.95 ☐

System 4 at £309.95 ☐

System 6 at £374.95 ☐





## Spectrum Software Scene

### Arnhem

THE RACE for the bridge at Arnhem was one of the more daring strategies of World War Two. General Montgomery conceived the plan of a rapid advance across Holland with paratroopers dropped behind the lines to capture the vital river bridges.

Forty years on CCS has conceived the not-so-daring plan of simulating the enterprise in a series of five scenarios culminating in the full-scale battle, Operation Market Garden.

Long-time specialists in wargames, many of which had little merit, CCS seems finally to have cracked it. **Arnhem** is one of the finest computer wargames we have seen, a blend of complex strategy, historical authenticity, and simple, swift operation which will have fans returning for more.

The playing area scrolls over a map

of the roads and terrain towards the final bridge. Units are moved in turn, and have an abstract form. You can call up reports on their strengths and efficiency, and issue orders which will be continued on subsequent turns unless cancelled.

The attention given to realism includes the formation of individual units, which can travel fast in condensed form or slowly in open order. The condensed form equates to a column of tanks, for example, which can take advantage of a road for speed but is hampered in combat.

Provision is given for one, two or three players. With three players one player commands the Germans, one the Americans and one the British forces. An introductory scenario can be completed in an hour, and consists of capturing the first bridge at Eindhoven. A full map is provided with a comprehensive booklet.

At the end of the game an assess-



ment is made of your success. If you have failed to advance swiftly you fail, but you may be granted victory anyway, as it is possible to do well enough to make the outcome inevitable.

Wargames of this sort are not for the impatient, nor for the complete novice at strategy. But for those who enjoy simulation wargaming, **Arnhem** is one of the best, and captures the problems of maintaining a swift advance along narrow country roads remarkably well.

*Chris Bourne*

**Publishers CCS Price £8.95**

**Memory 48K**

★★★★

### Battle for Midway

EEEEEOOWWW . . . dakka dakka dakka . . . BOOOMM!!! And another Jap aircraft carrier sinks beneath the blue Pacific.

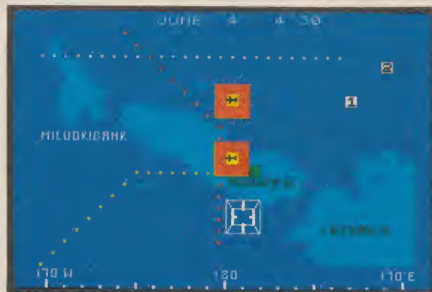
PSS has produced a passable war-game in **Battle for Midway**, which follows events fairly accurately.

Designer Alan Steel says he wanted to mimic 'The Fog of War', by which he seems to mean not knowing what's going on. That is entirely justifiable, and much of Midway is spent trying to locate the Japanese fleet before it realises you're onto the dastardly plan.

Unfortunately there is not a great deal of subtlety about the best tactics.

As soon as you've found the main Japanese attack force, you send as many aircraft after it as you can, until you have sunk all four aircraft carriers. When they are out, the Japanese limp back home again.

The battle sequences are a novelty, using arcade skills. If you are attacked you get a gunsight and must blast the Japanese out of the sky. You also get a gunsight when you try to bomb the



Japanese, but it will only shoot down your own planes. Steel says that's to pander to the tastes of arcade freaks, who'll shoot at anything. It looks more like an excuse to use the same piece of code.

We found it easy to scuttle the Nipponese schemes on level two, the straight historical simulation. There is a level three in which the Japanese are forewarned about your fleets and lay a trap, which might be more difficult.

A few months ago we would have said it was fine. After **Overlords** and **Arnhem**, however, it seems a bit ordinary.

*Chris Bourne*

**Publisher PSS Price £9.95**

**Memory 48K Joystick Kempston, Cursor, Sinclair**

★★★

### Don't Buy This

WARNING. This cassette contains five of the most uninspired games ever to disgrace the Spectrum.



In **Fido I** and **Fido II** you play Fido the mole bashing pup. When a mole incautiously lifts its head above ground, Fido rushes over, sits down and thumps it with its tail.

**Weasel Willy** refused to load. The cassette inlay states that 'playing the game is easier than setting the keys'.

**Race Ace** is the antithesis of any race game ever. It is alternatively too slow and too fast, and to increase playability the control keys are backwards - 'left is left when the kart goes up but right when the kart comes down . . .'

You are advised to play **Fruit Machine** at around four in the morning when you are asleep.

Firebird disclaims all responsibility for the game and states that the product 'may be copied, lent, hired or transmitted at will.' It also advises action if the programming is faulty - put sticky tape over the lug holes and use it as a blank cassette.

*Clare Edgeley*

**Publisher Firebird Price £2.50**

**Memory 48K Joystick Kempston**

★★

*more software on page 28*

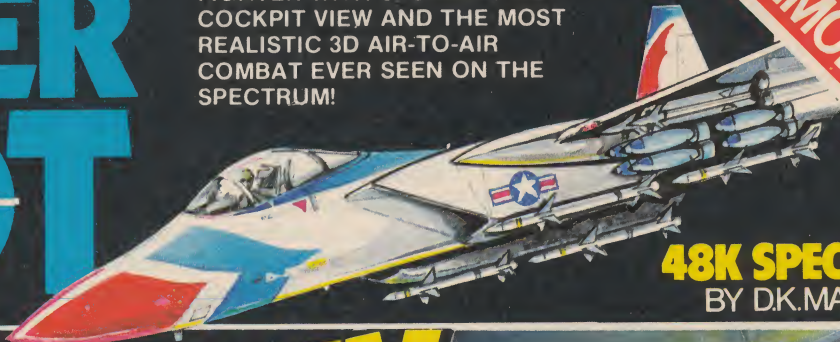


ONLY THE BEST BECOME A....

# FIGHTER PILOT

A SPECTACULAR FLIGHT SIMULATION OF THE WORLD'S MOST EXCITING JET FIGHTER WITH STUNNING 3D COCKPIT VIEW AND THE MOST REALISTIC 3D AIR-TO-AIR COMBAT EVER SEEN ON THE SPECTRUM!

FIGHTER PILOT  
NOW ON  
COMMODORE 64



**48K SPECTRUM**  
BY D.K. MARSHALL

Only the bravest fly .....

# TOMAHAWK

**48K SPECTRUM**

BY D.K. MARSHALL

FROM THE AUTHOR OF FIGHTER PILOT...THE FIRST AUTHENTIC HELICOPTER SIMULATION FOR THE ZX SPECTRUM. CLIMB INTO THE HOT SEAT OF THE MEANEST, DEADLIEST COMBAT HELICOPTER EVER TO RULE THE SKIES!

COMING SOON!



# TT RACER

Only the fastest win in ...

**48K SPECTRUM**

BY R.J. SWIFT

THE SUPREME MOTORCYCLE RACING SIMULATION FOR THE SPECTRUM. PUTS YOU ON THE HOT SEAT. RACING FOR THE FINISHING LINE. YOU'LL NEED TO BE A TOP RIDER TO TAKE THE WINNING FLAG AS ONLY THE FASTEST WIN!



ONLY ACES SURVIVE IN ...

# NIGHT GUNNER

**48K SPECTRUM**

BY R.J. SWIFT

THE AMAZING AIR BATTLE SCENARIO THAT STRETCHES YOU TO THE VERY LIMIT — GUNS BLAZING. ENEMY FIGHTERS ATTACK FROM ALL DIRECTIONS — 3D GROUND ATTACK SORTIES AND THERE'S STILL THE FLIGHT BACK HOME!



Selected products available from: Boots, Woolworths, H.M.V., Menzies, W.H. Smith, Greens, Lasky's, Currys, Rumbelows, Selfridges, Spectrum Dealers, Video Palace, Zappo and all good computer shops.

**DIGITAL INTEGRATION**

Watchmoor Trade Centre,  
Watchmoor Road, Camberley,  
Surrey GU15 3AJ



TM Trademark

AMSTRAD CPC 464

Fighter Pilot

☐ £8.95

COMMODORE 64

Fighter Pilot Disk

☐ £14.95

Fighter Pilot Cassette

☐ £9.95

LOADING TIMES

DISK - 147 SECS

CASSETTE - 300 SECS

SPECTRUM

Night Gunner

48K

☐ £6.95

Fighter Pilot

48K

☐ £7.95

Tomahawk

48K

Coming

TT Racer

48K

Soon

Cheques payable to Digital Integration Ltd

I enclose a cheque/P.O. for \_\_\_\_\_ Total

Name \_\_\_\_\_

Address \_\_\_\_\_

Or debit my Access Account No.

\_\_\_\_\_



Tele Sales  
(0276) 684959

Please send to Digital Integration, Dept SU 7/85 Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3AJ.  
Trade and Export enquiries welcome. Lifetime Guarantee.



# Spectrum Software Scene

## Locomotion

A GEM has turned up in Mastertronic's range of budget software.

**Locomotion** is similar to Incentive's **Confuzion**, which itself was by no means original. Despite that it is surprisingly addictive with well graded difficulty levels.

You are a track layer on the railways trying to lay a section of track ahead of a train before it catches up and goes off the rails.

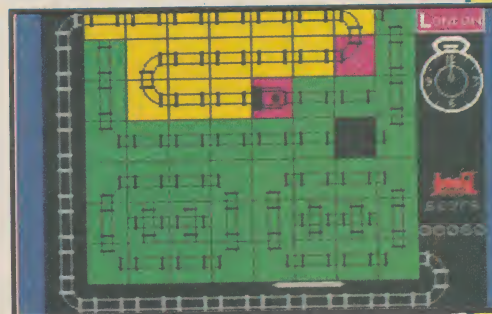
The track is lying around in jumbled sections and you have to create order from chaos in the same way as

those slide puzzles where you have one empty space into which to move the tiles.

Assembling the track within the time limit is simple at first but as you move from London to the continent, the tracks from Paris and other stations become progressively more difficult to unjumble and piece together.

The game can be slowed down by depressing the fire button – that will give you one minute's breathing space before the train charges ahead at full speed. Coal and water should be laid along the train's route when ever possible to earn bonus points.

Up to four players can play this simple game which for its price is a



bargain. Well worth digging into your pockets for.

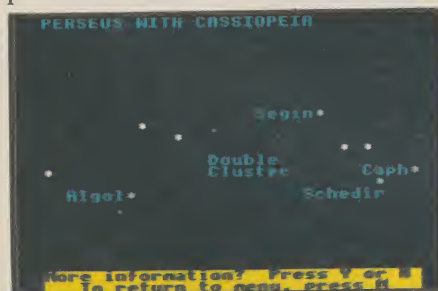
Clare Edgeley

**Publisher** Mastertronic **Price** £2.50  
**Memory** 48K **Joystick** Kempston,  
Sinclair, Fuller  
★★★★

## Spacescan Astronomy

THE arrival of Halley's comet in our solar system has generated interest in astronomy.

**Spacescan** is a program designed to introduce you to star maps and the position of the constellations. Fifteen



constellations are displayed with a map, named stars plus some information. Those maps can be printed out for observation. Another program, Starsearch, allows you to search through 75 heavenly bodies. There is also a quiz and a glossary.

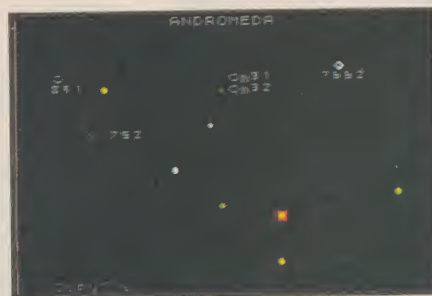
**Astronomy**, by Scisoft, contains similar information but scattered across four programs. The information contained is more detailed and the graphics are not as good as **Spacescan**. Moon phases and Saturn draw are two facilities which could well have been left out, though the Ephemeris section could prove useful. Keen observers could use printouts to identify stars.

Both programs use database techniques but without the stunning graphics found in most astronomy

books. As with a great deal of educational software the price seems just too high for what you receive.

Theo Wood

**Spacescan**  
**Publisher** Macmillan **Memory** 48K  
**Price** £5.95  
★★  
**Astronomy**  
**Publisher** Scisoft **Memory** 48K  
**Price** £10.00  
★★



## Car Cure

SOME software houses persist in believing that loading up illegible text on a flickery screen is preferable to turning the pages of a book.

**Car Cure** is one such absurd program. It attempts to do the job already done adequately by car maintenance manuals, but unlike those cannot be stored in the glove compartment nor consulted when you break down on the Honiton bypass. Neither does it have any detailed illustrations of the funny oily things located in bewildering abundance under the bonnet.

A manual can be accessed in seconds. **Car Cure** takes four minutes to load, during which time you are invited to solve a maze displayed on

the loading screen.

Fault diagnosis is a matter of pinpointing symptom areas such as 'instruments and warning lights', and then narrowing that to a specific problem – for instance, 'ignition warning light won't go off correctly'. All that is done through menus over which you move little arrows.

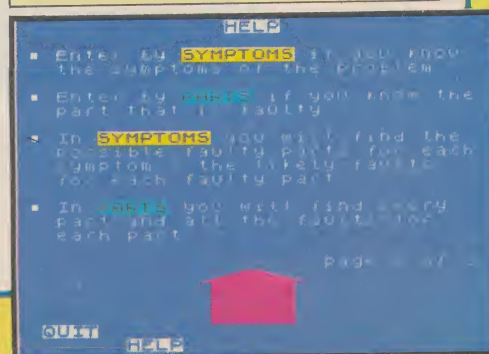
Having found the best description of your problem, you then move to a further menu listing possible faults. If you're a mechanical novice like me, then you'll give up at this point. After all, if I knew what 'alternator regulator defective' meant then I'd have whipped out my spanner long ago. Assuming, however, that you hazard a guess, you will eventually be rewarded with the comforting screen display: 'competent home mechanics can handle this.' Exactly. I'll have to take

it down the garage after all.

Competent home mechanics will have no use for this program. They already own libraries of service manuals and don't need to get oil all over their Spectrum keyboards. Incompetent home mechanics will be totally baffled. Software like this gives computers a bad name.

Bill Scolding

**Publisher** Simtron **Memory** 48K  
**Price** 9.95  
★





## Pascal

THE **QL Pascal Development Kit** is a package of which Metacomco can be justly proud. Not only does it conform closely to the ISO-standard so dearly beloved by the business community and schools but also it provides facilities not commonly available on micro-computers.

Until recently software companies would not approach the standard. The reasons given were that any such compiler would need to be based on a mini-computer and that microcomputers just did not have enough memory to accommodate a full implementation.

Metacomco has proved them wrong. Its package contains a ROM on which is included part of the operating system firmware, two microdrive cartridges which contain the runtime editor and compiler, and an excellent and comprehensive Reference Guide.

The ROM is effectively a dongle – software protection – device which must be in the ROM slot if the compiler is to run correctly. On power-up its effects are felt straight-

away when a 'welcome' message is displayed. The firmware can be checked, to see if it is in working order, by typing ROM. If 'BAD ROM' is displayed you may have to send the package back to Metacomco.

The Runtime Editor is the same as that which is used in the Metacomco **Assembler, BCPL and Lisp** packages. It is a full-screen ASCII file editor which can be used separately, if required, for any Basic or machine



code listing. The program uses 20K RAM and needs a further 8K for workspace.

The one-pass compiler allows the production of a source listing file or a code file. If neither option is chosen the program simply checks the syntax of the source which you have created using the editor.

As well as implementing the ISO standard the compiler will allow the addition of a series of ISO extensions.

Those include procedures to allow internal files to access named files, a command which produces a similar effect to that of TRAP in 68000 machine code and a set of routines to deal with QL graphics.

An **INCLUDE** extension can also be called allowing a user program to call other files or programs. In that way a library of commonly used routines could be built up and used by your programs.

Although the package is not intended for complete beginners the manual accompanying it gives enough information about Pascal for anyone who has knowledge of a high level language, such as Basic, to get started. The package provides a complete Pascal environment and is the most comprehensive and comprehensible on the market.

The price may seem extortionate but similar packages on other micros and minis can cost ten or twenty times as much. The Metacomco package should make other manufacturers sit back and think.

*John Gilbert*

**Publisher Metacomco**  
**Price £89.95**  
★★★★★

## EVA

IF YOU do not buy **EVA** the author has threatened that he'll send his pet Ninja around to convince you.

He assures us that you will **CHEER** as you blast the invaders to tatters, **QUAIL** at the horrendous price of rivets for your gun, **CHURN** away at the space bar to fire and **SHRIEK** to the low budget sound effects.

The whole production is a thinly disguised version of Ultimate's **Jetpac** but with the added difficulty of having to get your fingers around the cursor control keys and the space bar.

In this game you have to put together a teleport, which consists of six segments. As each section appears at the top of the screen you must guide it around the platform obstacles to the two red-blocked areas at the bottom. Your space suit generates a magnetic field which draws the part to you. Just click the segment into place and a bleep sounds.

Play is not that easy though as there are the usual red fireballs with which you must contend. Just blast them

with your rivet gun.

When you have put the transporter together, retaining at least one of four meagre lives, you will be transported to the next screen which has more of the same. If you run out of lives you have to start again or maybe you would like to treat a friend to a thrill and go for the two-player option.

The game, which has the one saving grace of good flicker-free sprites, is little more than a load of cobbled concepts from Spectrum programs. By a fluke it is one of the first QL

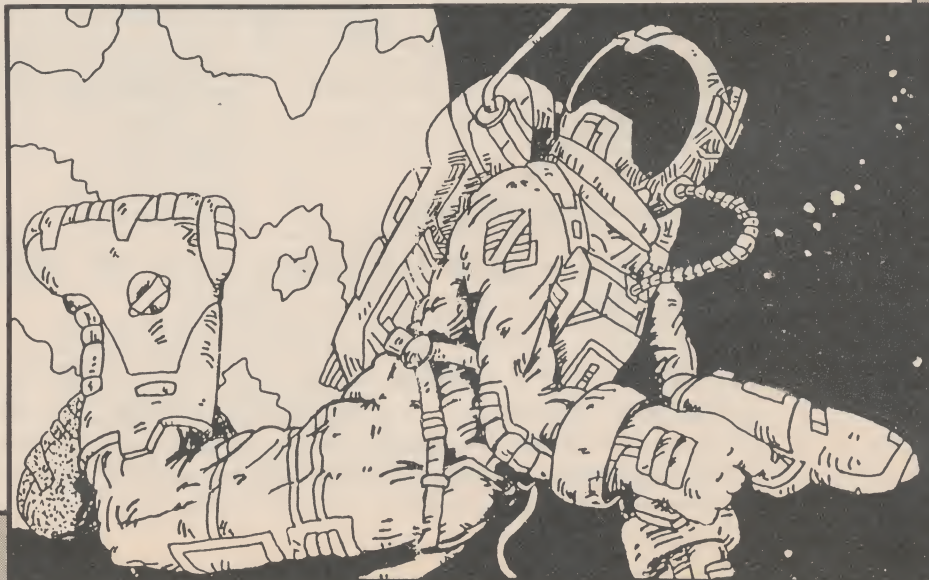
games on the market but, looking at it, you will see that that posed not problem.

If you have £10 to give away or are anxious to get software – any software – for your machine then buy **EVA**; if not, don't. Now excuse me while I deal with that Ninja . . .

*John Gilbert*

**Publisher Westway, 24 Preston Road,**  
**Lytham, Lancashire FY8 5AA**  
**Price £10.95**  
★★

*more QL software on page 32*





# Thinking soft ... thin

## THE TASWORD WORD PROCESSORS

The extensive features of the Tasword word processors are ideal for both the home and business user. Every Tasword comes complete with a comprehensive manual and a cassette or disc. The cassette or disc contains your TASWORD and TASWORD TUTOR. This teaches you word processing using TASWORD. Whether you have serious applications or simply want to learn about word processing, TASWORD and TASWORD TUTOR make it easy and enjoyable.

### TASWORD TWO (Spectrum)

#### 64 characters per line on the screen!

"Without doubt, the best utility I have reviewed for the Spectrum." HOME COMPUTING WEEKLY APRIL 1984

"If you have been looking for a word processor, then look no further." CRASH JUNE 1984

The cassette program is supplied with instructions for microdrive conversion.

TASWORD TWO\* ZX 48K Spectrum  
cassette **£13.90**  
microdrive cartridge **£15.40**

### TASWORD EINSTEIN

A sixty-four character per line display and the ability to hold over five hundred lines of text at any time are just some of the features of this, the most recent, of the Taswords. Full interaction with the disc system—e.g. Tasword detects the presence of added drives and allows their use.

TASWORD EINSTEIN Tatung Einstein  
disc **£19.95**

### TASWORD 464

"There is no better justification for buying a 464 than this program."

POPULAR COMPUTING WEEKLY NOVEMBER 1984

A particularly sophisticated yet easy to use program. Now available on disc. The cassette version is supplied with instructions for transferring to disc.

TASWORD 464\* Amstrad CPC 464  
cassette **£19.95**  
disc **£22.95**

### TASWORD MSX

With all the features of the Spectrum Tasword Two including the amazing sixty four character per line display. The Tasword MSX machine code program utilises the 32K of memory not normally available to Basic allowing over five hundred lines of text to be held in memory.

TASWORD MSX\* 64K MSX Computers  
Fully inclusive mail order price **£13.90**  
(cassette includes both disc and tape versions)

## THE TASCOPY SCREEN COPIERS

The TASCOPY screen copiers print high resolution screen copies with different dot densities and patterns for the various screen colours. This gives the screen copies a shaded effect which presents on a monochrome scale the colours on the screen. With TASCOPY you can keep a permanent and impressive record of your screen pictures and diagrams. TASCOPY supports all the printers mentioned under TASPINT.

### TASCOPY (Spectrum + Interface 1)

The Spectrum TASCOPY is for use with the RS232 output on ZX Interface 1. It produces monochrome copies (in a choice of two sizes) as well as copies with the shaded "grey scale" effect described above.

TASCOPY ZX Spectrum  
cassette **£9.90**  
microdrive cartridge **£11.40**

### TASCOPY 464

Adds two new commands to the 464 Basic to give both a standard shaded screen copy as well as a "poster size" copy which is printed onto two or four sheets which can be cut and joined to make the poster.

TASCOPY 464 Amstrad CPC 464  
cassette **£9.90**  
disc **£12.90**

### TASCOPY QL

TASCOPY QL adds new commands to QL Superbasic. Execute these commands to print a shaded copy of the screen contents. Print the entire screen or just a specified window. TASCOPY QL also produces large "poster size" screen copies on more than one sheet of paper which can then be cut and joined to make the poster, and high speed small copies.

TASCOPY QL Sinclair QL  
microdrive cartridge **£12.90**

## THE TASPINT STYLE WRITERS

A must for dot-matrix printer owners! Print your program output and listings in a choice of five impressive print styles. The Taspints utilise the graphics capabilities of dot matrix printers to form, with a double pass of the printhead, output in a range of five fonts varying from the futuristic data-run to the hand writing simulation of Palace Script. A TASPINT gives your output originality and style! The TASPINTS drive all Epson compatible eight pin dot-matrix printers, e.g.

AMSTRAD DMP 1  
EPSON FX-80  
EPSON RX-80  
EPSON MX-80 TYPE III  
NEC PC-8023B-N

Five impressive print styles for your use:-

MANNESMANN TALLY MT-80  
STAR DMP 501/515  
BROTHER HR5  
SHINWA CP-80  
COSMOS-80  
DATAC PANTHER  
DATAC PANTHER II

**COMPACTA** - bold and heavy, good for emphasis  
**DATA-RUN** - a FUTURISTIC SCRIPT  
**LECTURA** - clean and pleasing to read  
**MEDIAN** - a serious business-like script  
**Palace Script** - a distinctive flowing font

Typical Taspint output. Please note that different makes of printer produce different sized output.

### TASPINT (Spectrum)

Drives all the printer interfaces compatible with TASWORD TWO and can be used to print TASWORD TWO text files as well as output from your own Basic programs.

TASPINT 48K Spectrum  
cassette **£9.90**  
microdrive cartridge **£11.40**

### TASPINT 464

Can be used to print AMSWORD/TASWORD 464 text files in addition to output from your own Basic programs. Drives the Amstrad DMP 1 in addition to the printers listed to the left.

TASPINT 464 Amstrad CPC 464  
cassette **£9.90**  
disc **£12.90**

### TASPINT QL

TASPINT QL includes a screen editor used to modify files created by other commercial software, such as QUILL, or by the user from BASIC. These modified files include TASPINT control characters and may be printed, using TASPINT, in one or more of the unique TASPINT fonts.

TASPINT QL Sinclair QL  
microdrive cartridge **£19.95**



# Software?...

# Think Tasman

## OTHER TASMAN PRODUCTS FOR THE ZX SPECTRUM

### TASMERGE

#### The Mail Merger

Transfer data from MASTERFILE to TASWORD TWO! Letters and forms typed on TASWORD TWO can be printed with addresses and data taken from MASTERFILE. The mail merge facility allows, for example, multiple copies of a letter to be printed, each containing a different name and address taken from your MASTERFILE data. To use TASMERGE you must have one or more microdrives as well as TASWORD TWO and MASTERFILE by Campbell Systems. (version 9 or later).

TASMERGE ZX 48K Spectrum **£10.90**

### TASWIDE

#### The Screen Stretcher

With this machine code utility you can write your own Basic programs that will, with normal PRINT statements, print onto the screen in the compact lettering used by TASWORD TWO. With TASWIDE you can double the information shown on the screen!

TASWIDE ZX 16K + 48k Spectrum **£5.50**

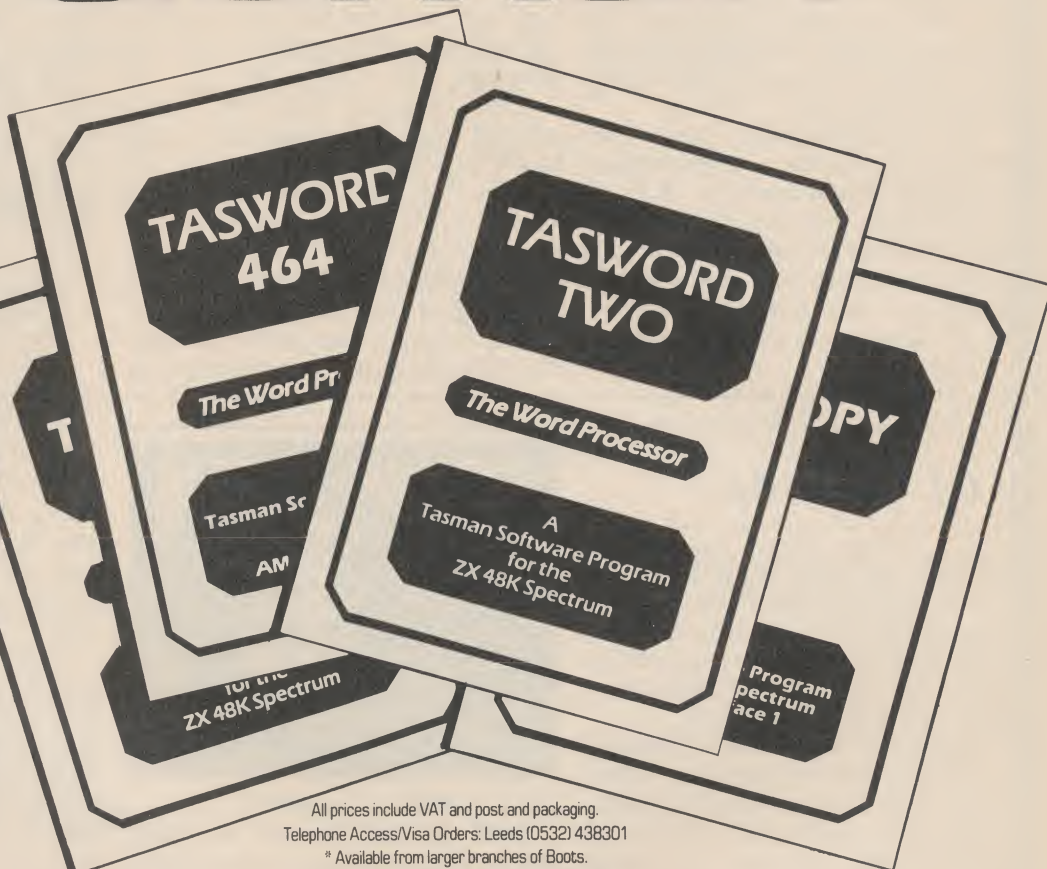
### TASMAN PRINTER INTERFACE

Plug into your Spectrum and drive any printer fitted with the Centronics standard parallel interface. Supplied complete with ribbon cable and driving software. The user changeable interface software makes it easy to send control codes to your printer using the method so successfully pioneered with TASWORD TWO. The cassette contains fast machine code high resolution full width SCREEN COPY SOFTWARE for Epson, Mannesmann Tally, Shinwa, Star, and Tandy Colour Graphic (in colour!) printers. TASCOPY, shaded screen copy software for this interface (value £9.90 – see description on left) is included in this package.

CENTRONICS INTERFACE ZX Spectrum **£39.90**

### COMPUTER PRINTER CABLES

RS232 for ZX INTERFACE 1 **£14.50**  
MSX CENTRONICS **£16.00**  
AMSTRAD CPC 464 CENTRONICS **£9.90**



All prices include VAT and post and packaging.  
Telephone Access/Visa Orders: Leeds (0532) 438301  
\* Available from larger branches of Boots.  
QL is a trademark of Sinclair Research Limited.

Available from good software stockists and direct from:

# Tasman

## SOFTWARE

Springfield House, Hyde Terrace, Leeds LS2 9LN. Tel: (0532) 438301

If you do not want to cut this magazine just write your order and post to:

TASMAN SOFTWARE, Dept. SU, Springfield House,  
Hyde Terrace, Leeds LS2 9LN.

I enclose a cheque/P.O. made payable to Tasman Software Ltd.  
OR charge my ACCESS or VISA number

No.

NAME

ADDRESS

SU 7 85

COMPUTER	ITEM	PRICE
		£ <input type="text"/>
		£ <input type="text"/>
		£ <input type="text"/>
		£ <input type="text"/>
Outside Europe add £1 for each item		
airmail £ <input type="text"/>		TOTAL £ <input type="text"/>

Send me the FREE Tasman brochure  
describing your products: tick here: ☐

I would like to know more about your programs for:

QL ☐ Tatung Einstein ☐ ZX Spectrum ☐ MSX ☐ Amstrad CPC 464 ☐



## Cartridge Doctor

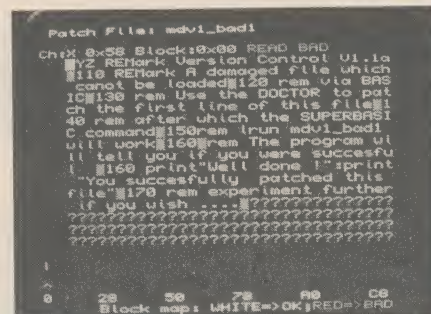
HAVE YOUR microdrives got the floppies? Had any data recovery problems lately? What you need is **Cartridge Doctor**.

The package, which includes five routines, will clone files, recover data which has become lost or scrambled and, if you know a bit about the internal workings of the QL, recover files which you have deleted from a cartridge directory.

The Autoclone facility can be used to back-up programs or copy complete cartridges. Unfortunately it is not a rapid copier, and can take three or four minutes to clone, but it will copy almost anything and recover files which have been accidentally deleted. It will allow you to scan a cartridge to identify 'bad' files.

File Patch can be put into operation when a bad file is found. It loads a file block into memory and displays it on the screen in ASCII format. You can then use a cursor to correct any corruption of the block which may show up. For instance, you may load in a Basic program which has become corrupted. You find that the first line has been changed from 10 PRINT "HELLO" to AS?NT "HELLO". All you have to do is use the cursor to correct the errors and re-save the program.

Badly damaged files, and those without headers, can be treated using the Salvage section of the package. All you need to do is to create a new file of similar length to the one which has been damaged, patch the original offending blocks, and read them out to the file which you have just created. In that way you can find a damaged file and repair it without having to



refer to its name on the header, which may be damaged.

The package is easy to use and a must for any of you out there who keep losing files – there can't be that many, surely. Just remember that **Cartridge Doctor** kills 99 percent of floppy bugs dead!

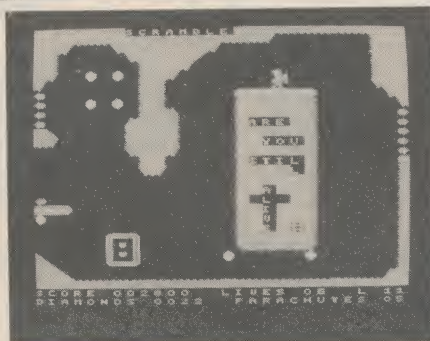
*John Gilbert*

**Publisher** Talent, Current Building, 101 St James Road, Glasgow, G4 0NS  
**Price** £21.95  
★★★★

## QL Caverns

ENTER the world of Willy on the QL, or someone who looks like him. Sinclair Research has given him the name BJ and he's been captured by aliens who have forced him into a mine to collect 395 diamonds.

**Caverns** is in the classic platform game mould except for three differences. The first provides BJ with a jetpack. It can be used to hover in caverns with dangerous blue walls which would be the death of our hero. BJ can bend down and walk through narrow tunnels. He can also bounce to the upper levels of the caverns using



handily placed trampolines.

Lives are easy to lose so heart-shaped lives are scattered around waiting to be collected. Most are carefully guarded by aliens with which you may collide if you jump too high, so don't be too ambitious.

Although there seem to be, oh, dozens of caves within Caverns, when you've seen five you've more or less seen them all. Movement is achieved with the cursor keys; we tried a joystick with the game but could not stop BJ from jumping.

If **QL Caverns** is going to be the standard of games from Sinclair then I wish it had kept its promise, and its intentions, not to launch any games. That was more than a year ago, though, and a lot can change in that time.

*John Gilbert*

**Publishers** Sinclair Research  
**Price** £10.95  
**Joystick**  
★★★

## QL Agenda

IF **QL Agenda** is an example of what new company Q-Soft is doing then the future does not bode well.

The utility combines a diary with a calendar for any month of any year. After you have waited three minutes for the diary to load you are asked to enter the current year, date and time. A calendar is then computed and the first two months are displayed at the right of the screen.

At the top of the display the current options are shown. The Design function can be used to change baud rate,

toggle printer output and sound and set the alarm. You can also load in a file of data or create a new agenda.

Each year requires one microdrive cartridge to store data and the package contains a utility to back-up data as well as the master program. That seems extravagant for one program when you can store at least three or four massive documents on one cartridge using **Quill**.

Once you have created an agenda you can enter your appointments for a specific year and month using a window at the left of the screen. It displays lines numbered from one to 15 and you use those index numbers to set something on a line.

Each line can contain 28 characters. If you type more, then part of your note is truncated. The other major problem is that you cannot edit the agenda to insert appointments between other entries.

Unfortunately that makes the package's prime use as a time-sequenced appointments file obsolete.

It would be quicker and easier to use a desk diary. It might also prove less expensive — unless you want to try and convince Inland Revenue that your QL is a tax loss.

*John Gilbert*

**Publisher** Q-Soft, PO Box 90, Barnet, Hertfordshire EN5 8RN **Price** £19.95  
★



# AT LAST!

# THE QL

# COMMUNICATES

## ANNOUNCING THE

## QL BRIGHT STAR

The multi-standard Intelligent modem, a totally new concept in modem design.

### **MANUFACTURED BY MODEM HOUSE — WHO ELSE!**

1985 is The Year Of Communications, so . . . link your QL to Prestel, Cityservice, Homelink, Farmlink, BT Gold, Knowledge Index, Easylink, One to One etc.

The QL Bright Star multi-standard modem is a completely new concept in modem design, and is supplied with communications software and built in centronics printer interface.

### **The Bright Star is truly a Quantum leap for the QL.**

The microprocessor controlled modem allows you to spool incoming data to microdrive or printer, save data to microdrive or printer, or link your QL to a standard centronics printer. (A 2K Buffer inc Standard).

### **Data Encryption facilities and fully comprehensive help menu provided as standard.**

Auto-Answer, Auto-dial version coming soon!

Main specifications: CCITT V21/V23, BELL 103/113

Speeds: 300/300, 1200/75 75/1200, 1200/1200

### **The QL Bright Star is truly the last word in communications.**

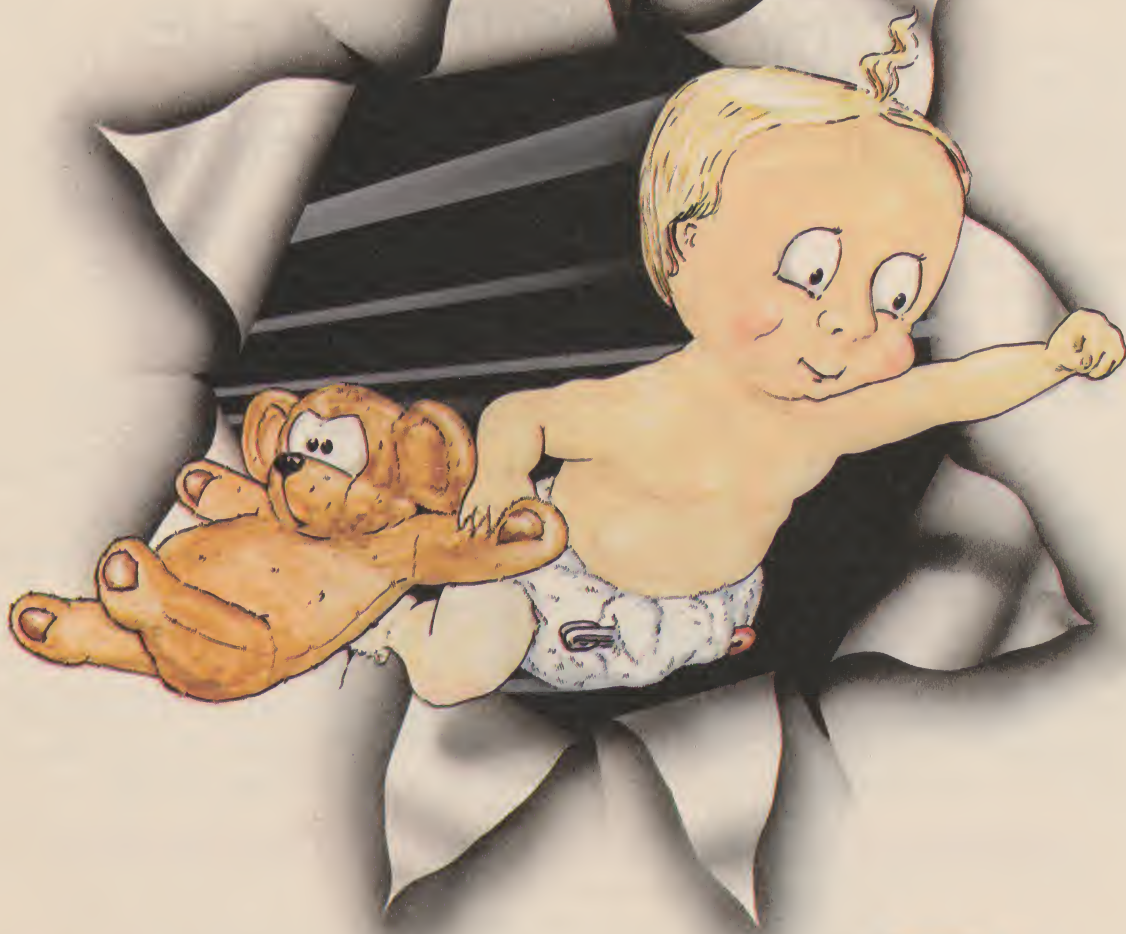
*Special note:* This product is not, and has not been connected in any way, with the Q-CON or Q.E. Ltd. and is British designed and manufactured.

**At an amazing special price of £179.95 complete  
(RRSP £199.95)**

**MODEM HOUSE**  
**Iolanthe Drive, Exeter, Devon EX4 9EA**  
**Telephone: (0392) 69295**



# Herbert's



## Dummy Run

*Trouble In Store for Herbert*

Spectrum 48K £9.95

Commodore 64 £9.95

Amstrad CPC 464 £9.95



### MIKRO-GEN

44 The Broadway, Bracknell, Berks. 0344 427317



**ULTIMATE**  
PLAY THE GAME

## 48K SINCLAIR ZX SPECTRUM



"ALIEN 8", "KNIGHTLORE", "UNDERWURLDE" and "SABRE WULF" recommended retail price £9.95 inc VAT. Available from W.H.SMITHS, BOOTS, J.MENZIES, WOOLWORTHS and all good software retail outlets. Also available from  
ULTIMATE PLAY THE GAME, The Green, Ashby-de-la-Zouch, Leicestershire LE6 5JU  
(P&P are included) Tel: 0530 411485



# The first QL adventures from TALENT!

## The Lost Kingdom of ZKOL

Explore the ancient dwelling-place of the Dwarves – where the Wizard guards the last precious secret.

A classic and complex text adventure with hundreds of locations and a huge vocabulary. Set in real-time with traps, tasks, puzzles and mazes – and a special note-pad feature to aid you.

**"the quality of the game is superb"**  
Micro Adventurer

PRICE  
**£19.95**  
+ 50p postage and packing



## WEST

You are on the track of a notorious gang of bank robbers who have gone to ground near an abandoned mining town deep in Indian territory. Your task – to outwit and outgun the robbers, collect as much loot as possible and piece together clues on how to escape.

A demanding and exciting text adventure for the experienced games-player, using over 200 words and as many phrases. There are over 130 locations to search – not all of them easy to find. Events happen in real-time outside your control – Indians charge, rattle-snakes slither past and robbers appear and shoot at you. How long can you survive?

PRICE  
**£19.95**  
+ 50p postage and packing  
(Also on CBM 64, BBC & Electron)

**TALENT**  
COMPUTER SYSTEMS

CURRAN BUILDING, 101 ST JAMES ROAD, GLASGOW G4 0NS  
24 HOUR CREDIT CARD HOT-LINE 041-552 2128

Available from selected  
branches of:  
**John Menzies**  
**WHSMITH**



# A QCON out of the ashes

THE DEMISE of OEL left Sinclair with rather more egg on its face than usual. It had just spent a bob or two on full page colour adverts for QCOM, a communications/modem package for the QL, and by the time the ads appeared, OEL had disappeared.

Tandata, who already supplies a number of very nice modems for other computers, has now taken up QCOM and the finished product should be available soon.

QCOM comprises three parts, QCON, QCALL and QMOD, which stack neatly on top of one another and are styled to match the QL. The base unit, QCON, is the heart of the system and is the minimum required; the other units are optional.

QCALL provides auto dial and auto answer and QMOD is the modem.

QCON connects to the QL SER2 port and takes its power direct from the QL power supply, the QL is then powered from QCON. It is supplied with the Scion software and it is that which makes it so good.

The Scion software loads in two stages; first a short Basic boot program which asks you to input the date

and time, and then the code proper. A main menu is displayed with everything neatly laid out and windowed, and from that follows a series of sub menus.

The first option, and probably the one which will get most use, is Viewdata, through which you can access Prestel.

The second option is entitled VT100 and is a full terminal emulation of the industry standard for con-

nection to mainframes. The sub menu allows you to log on, hang up, alter various settings — which can be saved for future use or reset to default or go into terminal mode. These options are standard but QCON comes into its own with the next four.

Switchboard, option three, is the phonebook which stores pages of telephone numbers. Each page has its own default settings, which can be changed. Each entry has several options, the 'phone number can be set on dial and there is space for a comment. That last can be set so that it is automatically sent when you log on.

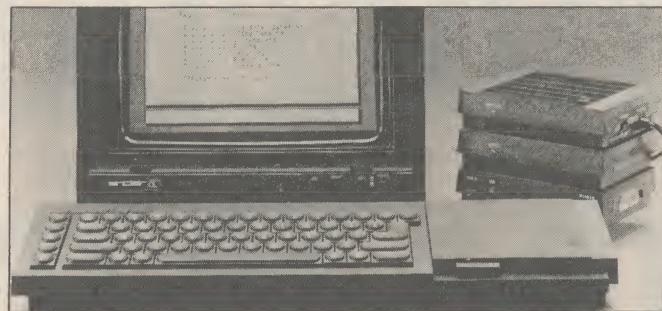
Option four gives you access to the QDOS filing system and with this you can list or delete a file, and obtain a directory.

The last two options on the main menu allow you to build a file of commands and run them. The commands available are quite extensive; if you had QCALL connected you could set it to 'phone Prestel at a certain time, access a page, save it to microdrive, and hang up.

The limitations to the system is QMOD. It can only run at 1200 or 75 baud, and although many information providers use those rates, 300 baud is still popular. OEL had applied for British Telecom approval but the process was suspended when the company ran into difficulties.

The prices of the individual units are QCON £89.95, QCALL £49.95 and QMOD £79.95 — a total price of £219.85.

For further details and availability contact Tandata Marketing Ltd, Albert Road North, Malvern, Worcestershire WR14 2TL. Tel: 06845 68421.



## Quest slips big discs

QUEST was one of the first companies to announce support for the QL with both hardware and software. Last month we looked at its add-on RAM, and this month we turn to disc drives and the CP/M 68K operating system.

The disc interface is housed in the same, over large, case as the RAM.

Before the drives can be used the disc operating system has to be loaded from microdrive, — an archaic practice, but otherwise the EPROM-based software would interfere with running CP/M. The result is that memory is used up which, if you load a large program, such as Quill, requires it to access the disc more often than would otherwise be necessary.

Once up and running the disc behaves in much the same way as a microdrive, using FDV in place of

MDV. It competes with the microdrive in speed, and loses. Saving can take up to twice as long, although loading is quicker. Booting a program takes an age.

To format a disc the software again has to be loaded from cartridge.



One area where the discs are useful is in running CP/M 68K. It can be run solely from cartridge but requires an additional operating system card. We looked at the disc-based system, as with the DOS it has to be booted from cartridge. The microdrives are treated as A> and B>, floppies as C> and D>.

CP/M 68K is supplied

with a large manual and two discs with a number of utilities. The discs contain a C compiler, an assembler and a text file.

The system can read and write files to IBM format discs and there is a utility which will convert QDOS files to CP/M 68K format.

CP/M 68K costs £59.50 on disc, £99.50 on cartridge. The disc drives, all 5¼in including interface, are 1×200K £295.00, 1×400K £419.00, 1×800K £499.00, 2×200K £469.00, 2×400K £579.00 and 2×800K £695.00.

If you are looking for a disc system only then there are better and cheaper ones available. If you want to run CP/M 68K then this is the only system around.

Contact Quest Automation Plc, School Lane, Chandler's Ford, Hampshire SO5 3YY. Tel: 04215 66321.



# The Rotronics Wafadrive 'Peripheral of the Year'\*

The Computer Trade Association/Leisure Electronics Trader Peripheral of the Year Award. Personal Computer News Best Buy. And nominated for the British Micro Awards. All these successes are a result of Wafadrive's transformation of Spectrum data storage.

Now, the power and convenience of floppy disk can be yours, but at a fraction of the cost – only £129.95!

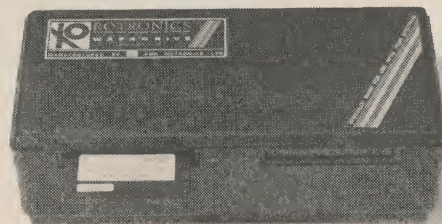
Wafadrive houses five major components – micro interface, two 128K drives, RS232 serial and Centronics parallel ports – all within one compact unit. We've also included Spectral Writer – a superb word processing program – and a blank wafer. So you can start operating straight away.

Wafers are available in three sizes – 128K, 64K and 16K. All load well over ten times as fast as cassette, and their data integrity is on a par with floppy disk!

You'll find a rapidly growing range of software from games to business applications.

Find out more about the Wafadrive revolution. Ring us on High Wycombe 452757 or write to Rotronics Limited, Santosh House, Marlborough Trading Estate, West Wycombe Road, High Wycombe, Bucks HP11 2LB. We'll send you our full colour brochure by return.

## **ROTRONICS**



\* Computer Trade Association 1984 Product of the Year (Peripheral)

## **the Spectrum storage system**



# A jack of all trades

THE NEW combined TV monitors are at best a compromise, and the Ferguson MCO1 is no exception; it is a jack of all trades.

The MCO1 can be used by both the Spectrum and the QL when running as a TV and as a monitor with adaptors from Ferguson. The QL adaptor is a suitable lead, code No MA17 and priced £5.85, which connects the QL RGB socket to the back of the TV. There is also a composite video socket on the MCO1 which could be driven from the QL, but you would have to make your own lead for this.

To get RGB from the Spectrum, Ferguson can supply the MA20, priced £29.95, which converts the



composite video output at the edge connector — which means it will only work on issue three or later — to TTL RGB. With TTL, brightness cannot be shown. The adaptor has a through port for other add-

ons, a 'green screen' switch which gives a green and black display, and a colour control for the RGB.

The TV has the normal volume, brightness, contrast and colour controls — the last two are inoperable when

running RGB — plus eight push-button channel selectors. Channel seven is used for RGB, and eight for composite video. On the back are the RGB, composite video and aerial sockets with an additional earphone socket. There are no accessible positioning controls.

The TV picture is only adequate. Running the computers in this mode gives a reasonable display but, with the QL, is a little indistinct. In RGB mode the QL display is very good, but the



picture is only TV-sized. When running the QL in monitor mode the edges of the picture are lost.

The Spectrum display, using the MA20 adaptor, is variable. For high definition work, such as **Tasword 2**, in black and white there is a slight ghosting to the right of the characters.

The MCO1 is a reasonable product and, within limits, it performs well. It is not as good as separate units, but then it is considerably cheaper at £229.

## Wanted: use for pretty poly print

LINGUISTS will welcome Polyprint from Cambridge MicroElectronics. As well as being an Eprom-based Centronics printer interface it gives instant access to six different international character sets, any one of which can be displayed on screen in place of the standard Spectrum set.

It can be used with **Tasword 2** and will display the same international characters in both 64 character and 32 character modes.

The international characters are based on those used by the Epson '80 series of printers, the RX80 and FX80, so the printer can easily reproduce them. They are French, German, Danish (Denmark I), Swedish,

Italian and Spanish. The screen copy routine is also set up for Epson compatible printers.

It is one of the most user-unfriendly interfaces I have used for a long time. On power up you must enter the sequence OUT 959,255: OUT 959,120: OUT 703,128: RANDOMIZE USER 15360, to direct LPRINT and LLIST.

Changing character sets is performed by a single OUT command, apart from Italian, which requires another long Basic line; the printer must be switched separately. The COPY command is implemented using a RAND USER statement, and only one size is available.

Linguists apart, it is difficult to know to whom Polyprint will appeal. Having different character sets is useful but only one can be used at any one time which is potentially limiting.

**Tasword 2** is available in a number of different lan-

guages, including Dutch, Flemish, Cyrillic and Icelandic.

The main drawback to Polyprint is the price, £51.69, which compared to the Kempston 'E' and Euroelectronics LPrint III is high. Contact Cambridge MicroElectronics Ltd, One Milton Road, Cambridge.

## Disc doubler

SINGLE-SIDED discs usually have a magnetic coating on the other side which though not up to standard is still usable.

The Disc Doubler cuts a 'write protect' notch in the disc so that you can turn it over to access the other side.

To discover if it will work cover up the timing with opaque sticky tape, taking care not to stick the magnetic disc to it, and try to access the disc. If the message 'Write Protect' is displayed then the Doubler should work.



The Disc Doubler costs only £15.00 inclusive, and if it works on your system will pay for itself in no time at all. Details from Associated Computer Marketing Ltd, 54 Grosvenor Road, Aldershot, Hampshire.

more hardware on page 40





# Microdrive master

**MAKING** microdrive copies of your own programs for your own use is not illegal as far as I know, but can be extremely difficult. If you bought a microdrive to speed the loading of your favourite games – the main reason for most people buying them – then it is doubly difficult due to the



memory space taken up by the microdrive.

Help, however, is at hand. The Microdriver, from Mirage Microcomputers, is a piece of hardware for the Spectrum which allows you to make a backup copy of any program to mic-

rodrive at the push of a button. As the Microdriver has to be connected to the computer to re-load any programs saved using it, it will be of little use to commercial pirates but it is a boon to the home user.

Using the Microdriver is simple. A program is loaded in the normal way, with the Microdriver attached, and at any time – even in mid zap – you can push the button on it and the computer is stopped. A menu appears with a number of options and, once you have made your choice, the program can be started at the same point at which it was stopped.

The menu options are Load and Save; Poke, which allows you to enter those infinitive lives; Run, to restart a program; or New, which clears the computer. All options are error-

trapped. If you are saving to microdrive and the program exists, you are given the option of overwriting it. In this way, in an adventure program you can save your current position without having to start at the beginning every time.

As the Microdriver is hardware-based it is almost

impossible to protect a program from it. If you have a microdrive the Microdriver is the most important piece of hardware you could buy.

The price, £39.95, is a little high, considering the dearth of components inside, but its features still make it 'good value'. For more information contact Mirage Microcomputers Ltd, 24 Bank Street, Brintree, Essex, CM7 7UL. Tel: 0376 48321.

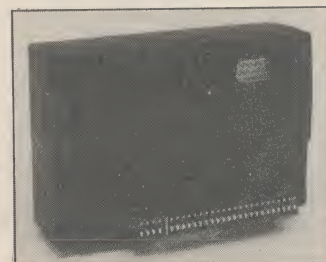
## No dead ends

**KEMPSTON** compatible joystick interfaces are plentiful but many suffer from being 'dead ended' – they have no through connector for other add-ons.

The latest interface from Cheetah is available both with and without a through connector, £12.75 with and £11.50 without.

Both should stand many hours of alien zapping. For

further information contact Cheetah Marketing Ltd, 24 Ray Street, London EC1R 3DJ. Tel 01-833 4909.



## 3 storey computer homes for under £60

Looking for a new home for your computer? Tired of being pushed from room to room with your bulky PC peripherals? Better take a look at the Organiser showhome from Opus Supplies. It's fully modded and combines practical features with modern design.



**3rd storey**  
– Impressive view and just the place for your monitor and printer

**2nd storey**  
– Lots of floorspace for your computer and disc drive or cassette recorder. Ample storage space for your software.

**1st storey**  
– Parking space for your books, manuals and magazines.

And at only £59.95 you won't even need to take out a mortgage.

The Organiser desk from Opus Supplies comes complete with castors and simple assembly instructions and our price includes VAT and free delivery.

To order your system phone us on: 0737 65080 or post the coupon to Opus Supplies Limited.

To: Opus Supplies Ltd,  
55 Ormside Way, Holmethorpe Industrial Estate, Redhill, Surrey.

Please rush me the following:  
(PRICES INCLUDE VAT AND CARRIAGE)

Organiser Desk(s) at £59.95 each (inc. VAT)

I enclose a cheque for £ or please debit my credit card account with the amount of £

My Access ☐ Barclaycard ☐ (please tick) no. is:

Name

Address

Telephone

**Opus.**  
Opus Supplies Ltd.

55 Ormside Way,  
Holmethorpe Industrial  
Estate, Redhill, Surrey.  
TELEPHONE: 0737-65080

SU/7/85



# Drawing with flair and Style

A GRAPHICS tablet is a device which has an electronic pen and a special surface on which to draw. As the pen is moved across the surface, software translates the position of the pen and reproduces it on screen.

Saga Systems has allowed *Sinclair User* an exclusive preview of Style, a package of interface plus drawing software, priced at £29.95 inclusive, and a graphics tablet priced at £69.95 plus VAT. This compares well with other Spectrum tablets.

Initially the interface and software can be used with an ordinary joystick, and at a later stage, you can splash out on the graphics tablet. As a bonus the interface doubles as a Kempston compatible joystick interface.

The interface contains a two channel analogue-to-digital converter, so the technically minded could use it with their own analogue joystick or, with their own software, to input sound.

The software with the interface is comprehensive and easy to use. All the usual features are included – freehand drawing, straight lines, points and circles as well as elastic banded boxes and triangles.

You can zoom in on any part of the screen and magnify it by a factor of eight for detailed work, erase bits of the picture, fill them with ink, or add text. In order to keep track of where the character squares are, when colouring the drawing, a grid can be overlaid to highlight them. You must remember not to overlay the grid once you have started adding colour, otherwise the colours will be removed.

To colour the picture you can either change the attributes globally – over the whole picture – or locally, at the pen position.



The software has some nice features. Once it has been loaded you are presented with a menu, to

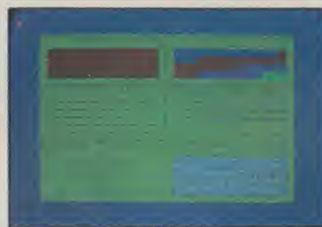


which the program always returns without losing the picture. The pen is used to select the option – icons are used on some which makes selection easier.

Once you are in the desired mode, for example, freehand drawing, a cursor is displayed on the screen as you move the pen around. There is a button on the left of the graphics tablet and

when you press this the pen starts to draw.

Two brush effects are available; either a solid line or stipple. Drawing solid lines is quick, while shading has to be done more slowly. Fill also has two modes,



either solid or using alternate lines.

No product ever does everything you want in the way you want it to, and Style is no exception. Saga is aware of this and is open to suggested improvements, which might well be in-

cluded in later versions.

Whether you just want to draw pictures for your own amusement, or to produce the ultimate loading screen then Style is a good way of producing them. The software is not up to the standard of some drawing programs now available but it is readily usable and continually improving.



For further details contact Saga Systems Ltd, Gran Haig House, Woodham Road, Woking, Surrey. Tel: 04862 22977.

## Add on a new keyboard

NOW may not be the best time to launch a new add-on keyboard for the Spectrum, following so soon after the introduction of the Spectrum Plus, but the 68FX2 from LMT might tempt even owners of those to upgrade their computer.

Not only does the 68FX2 use moving keys but there are 68 of them, including many single key functions, and all for only £39.95.

Fifteen of the keys are on a separate numeric pad giv-

ing the numbers 0 to 9, plus, divide, multiply, subtract, and point (full stop) as single key functions, and Enter. On the main keyboard, which includes a full-sized space bar, are two oversized Caps Shift keys, four shifted cursor keys, Edit, Delete, Break, Graphics, Caps Lock, Extended Mode, Run, and Comma.

Interface 1 fits under the keyboard which is also designed to take LMT's proposed disc interface and

printer port internally.

At the price the nearest rival is the DK'tronics keyboard which, with the extra printed key caps, is more expensive and offers fewer features. The Enter key has been moved up a line, to Q-P from A-L, which takes some getting used to.

For further details contact LMT Computers, Unit 2, 274 Baker Street, Enfield, Middlesex EN1 3LS. Tel: 01-367 0035.





DOMARK

presents

**YOU** as . . .



**007** 

# **A VIEW TO A KILL**

## **THE COMPUTER GAME**

**YOU will become  
James Bond  
his first arcade/adventure  
AVAILABLE NOW ON  
Spectrum 48K, Commodore 64,  
Enterprise  
and watch out for  
Amstrad, MSX and others**

**ORDER YOUR COPY NOW!**

**CALL 01-947 5624/5/6**

OFFICE HOURS ONLY

NAME: (BLOCK LETTERS) .....

ADDRESS .....

COUNTY ..... POSTCODE .....

Please send me ..... copies of "A View to a Kill – The Computer Game"  
at £10.99 (includes postage and packing).

I enclose a cheque/P.O. for £ .....

My computer is: .....

You may order by Access ☐ Visa ☐ American Express ☐ by post or  
telephone (01-947 5624/5/6) office hours only

Please debit my CREDIT CARD ☐ Signature: .....

Account No:

Expiry Date: .....



DOMARK

To: Domark Ltd., 204 Worple Road,  
London SW20 8PN  
Telex: 894475 G



# BEYOND

CHALLENGING SOFTWARE

Now for  
Spectrum 48K  
and  
Commodore 64



Spy vs Spy is two player cartoon fun!  
The black and white spies chase each  
other around the embassy.

They steal secrets and plant  
traps, playing against each  
other on a split screen display.

Available from software dealers everywhere or direct from  
**Beyond** Competition House, Farndon Road, Market Harborough, Leicester LE16 9NR.  
Access/Barclaycard telephone: 0858 34567. **Price £9.95** inc. P&P







# DOWN DARAGH



GARGOYLE  
GAMES

SPECTRUM 48K  
AMSTRAD 464

£9.95

GARGOYLE GAMES LTD., 74 KING STREET, DUDLEY, WEST MIDLANDS DY2 8QB  
Telephone: (Sales) 0384 238777 (General) 0384 237222



**Acute add-on allergy?  
Chronic hardware headaches?  
Don't suffer in silence —  
write to Sinclair Surgery.**

**Sinclair Surgery**

## Wear and tear on Wafadrive

RECENTLY I purchased a Rotronics Wafadrive but one or two problems have emerged. When initially switching on, using my monochrome VDU, the screen will often display a series of vertical broad stripes, or a pattern of flashing rectangles, or one large black rectangle within the border frame, or a series of question marks after the Sinclair logo.

Under those conditions NEW\* will not ENTER to initialise the Wafadrive and only plugging and unplugging the power supply several times eventually gives me a condition whereby NEW\* works.

How can I obtain a Wafadrive version of the Vu-File datafile program.

**Barrie Rhodes,  
Rodley,  
Leeds**

● *The probable cause of this is that the edge connector is dirty or worn. Try cleaning it with a preparatory cleaner or an Indian rubber. If this does not work contact Rotronics. To copy Vu-File to wafadrive you will need a commercial copier.*

## Transferring to diskette

I RECENTLY bought a Shugart SA200, 5¼in slimline, single sided, single density, soft sectored disk drive for my Spectrum — 8K at the top of RAM is reserved for the system.

I have been able to save Basic programs on diskettes but I have so far been unable to transfer commercial programs from tape to disk.

Could you suggest a method which would enable me to load full 48K programs and then save to disk, or a program which would do the job?

**James Mobberley,  
Newcastle,  
Staffordshire**

● *This is a common problem with the Primordial Peripherals and Watford disc interfaces. You will need a special copying program from the makers.*

## Functional Caps shift

ON THE Spectrum Plus, can the already Caps-shifted cursor keys be programmed to have specific functions.

**Declan O'Mahoney,  
County Tipperary,  
Eire**

● *Programmable joystick interfaces are not normally capable of responding to shifted keys. For that reason, and to make games compatible with the old Spectrums, the unshifted 5 to 8 keys are used. Some games will also respond to shifted keys.*

## Printerface incompatible

I HAVE a Spectrum and a Seikosha GP 500A printer with a Euroelectronics ZXL Print III interface.

I have no problems with general printing but it does not work on games like, **Sherlock and The Hobbit**. Are those programs written only for the ZX Printer?

**Colin Hojern,  
Hillbrow,  
South Africa**

● *The Euroelectronics ZXL*

*Print III, and the Kempston E, mimic the ZX Printer in that they can print standard ASCII characters sent to channel three. Games like **Sherlock and The Hobbit** do a bit copy of a line of the screen in a form only the ZX Printer can understand. Those interfaces, therefore, will not work with those games.*

Another problem with **The Hobbit** is that the standard keyboard reading routine is not used. That can cause problems if the program is used on a full-sized keyboard.

## Tasword Two troubles

I CAN'T get my Alphacom 32 Printer to work with **Tasword 2**. I have had no other problems with the printer.

**Bjørn Arild Lynne,  
Strommen,  
Norway**

● *The Alphacom 32 is a direct replacement for the ZX Printer. To print the text file go into E Mode and press P.*

## Character expansion

I AM using the **Spectral Writer** word processor which accompanies the Wafadrive package.

Although a very good piece of software, it has left me with one problem. How can I alter the line length so that I can print up to 100 characters before the carriage return signal is sent.

**C K Rowley,  
Wolverhampton**

● *The simplest way to do this, which can also be used on **Tasword 2**, is to go to the part of the program which*

*allows you to set the carriage return and linefeed codes and set them to zero. Then define one of the graphics characters as line feed and place it on alternative lines.*

Another method, which is less satisfactory, is to set the right margin on the printer to 100 (on Epson machines ESC Q) and, as before, set the control codes to zero. On **Spectral Writer** use POKE 55656,27:POKE 55662,81:POKE 55668,100, and save the customised version. The printer will now automatically print 100 characters and then perform a line feed, which may be in the middle of a word.

## ZX membrane malfunction

SIX MONTHS ago the keys N, M and B started to work badly on my 48K Spectrum and I sent it for repair.

Now the keys don't work again, and I have been thinking of buying a full-sized keyboard to avoid any more trouble. Should I do that?

**Kasper Sevaj,  
Charlottenlund,  
Denmark**

● *The usual reason for these keys not working is that the membrane under the keyboard is broken. The cheapest source of those which I've found is from TV Services of Cambridge Ltd, Frenches Road, Cambridge CB4 3PN. Tel: 0223-311371. Price £2.50 including VAT and postage, for overseas add an extra 50p. A full-sized keyboard would also solve this problem.*

As this is the second time these keys have gone wrong it is possible that the Spectrum is at fault so it might be worth checking first.



# **PREPARE YOURSELF FOR THE HIGHWAY ENCOUNTER.**



APPROACHING FAST...  
BRAIN-BLOWING GRAPHICS...MEGA-BLASTING POWER...FAST-ACTION PLAYABILITY...  
'HIGHWAY ENCOUNTER'...A TOTALLY NEW DIRECTION FROM VORTEX.

ONCE YOU'RE ON IT...THERE'S NO TURNING BACK.

· HIGHWAY ENCOUNTER FOR SPECTRUM 48K · £7.95 ·

VORTEX SOFTWARE (SALES) LIMITED. VORTEX HOUSE, 24 KANSAS AVENUE, OFF SOUTH LANGWORTHY ROAD, SALFORD M5 2GL.



# Making the most of a Spectrum move

Animation is a difficult subject to grasp. John Gilbert makes it easy

**L**AST MONTH I introduced user-defined graphics, and showed how you can create 21 of your own character designs using the alternative graphics character set.

The set is stored in RAM, initially contains the capitals A to U, and can be accessed by going into graphics mode.

This month the emphasis is on using those UDGs and the line/circle commands, to produce a variety of animation effects.

Each set of commands has something different to offer, the UDGs being more suited for detailed work while the line and circle commands are fine for wide spread, full screen, effects. No matter which commands you use, however, the animation effect is produced in the same way.

First a character, dot, or line is drawn on the screen and a pause is made so that the eye can register that appearance. The pause will only occur for a fraction of a second but is important in maintaining the pace of the movement effect.

The second action comprises two parts and can be done in two ways, one of which should be used if you are working with a simple routine or fast language and the other if you want to speed the action up and do not mind a flickering image on the screen. Both actions are similar but the effects are markedly different.

## Listing 1.

```
1 REM section one. Draw/erase
/redraw
10 FOR k=1 TO 20
15 REM lines 20,70 and 80 print
the inverse space on key 8
20 PRINT AT 0,k;"inverse space
"
30 PAUSE 2
40 PRINT AT 0,k;" "
50 NEXT k
55 REM second section. Draw/d
raw in new position/erase origin
al
60 LET k=1
70 PRINT AT 20,k;"inverse spac
e"
80 PRINT AT 20,k+1;"inverse sp
ace"
90 PRINT AT 20,k;" "
100 LET k=k+1
110 GO TO 70
120 REM program will end with a
B integer error
```

In the first, you remove the object which you have printed and redraw it in the next print position. If the switch between one position and the other is fast the impression of movement is created. The alternative method is to place a copy of the object in the new print position and only then erase the original.

There is a problem with each of those techniques. Using the first method the image will flicker because for a brief moment the image is off the screen.

The second method is similarly plagued, but for the opposite reason. When the original and new image are visible at the same time, even for a fraction of a second, your eyes will register a ghost image.

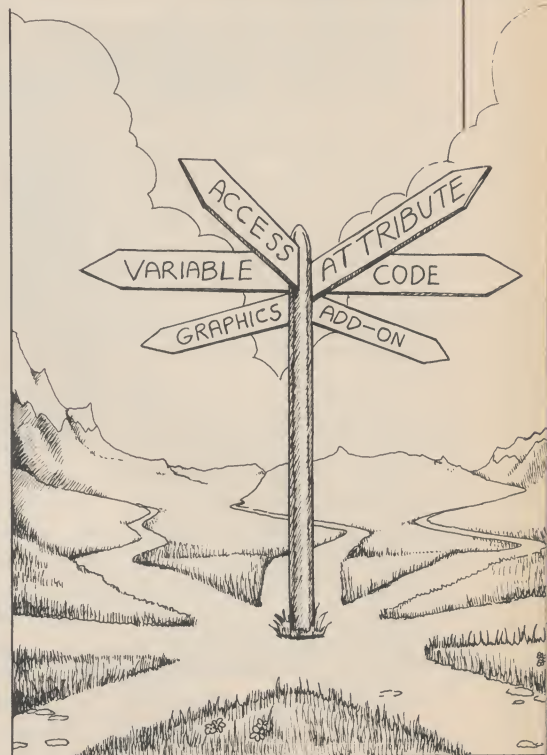
Listing one uses both techniques with a graphic block to demonstrate the difference in effect when using Basic. The first part of the program sends a block across the top of the screen using the 'take off/put on' technique. The block at the bottom of the screen is moved using the 'double image' method.

The technique can be adapted to bring a UDG character to life while keeping it in the same position on the screen. You may want to animate a stick man so that he walks across the screen, moving his arms and legs. In order to do that you will have to make a series of UDGs which show various stages of movement. Eight stages, or UDGs, are ideal but you could get away with four with the minimum of screen flicker.

The program would print the first stage, erase it, display the second stage one character square further on and then erase that.

Of course, the graphics do not have to be made up of one-square characters. You could put several together to form a large image and animate parts of it using the character square techniques described.

If you try animating a larger image you will see that the Spectrum has a major drawback. You must use a whole character square in animation



— you cannot use part of it. The Basic operating system has been written to deal with the screen on a character and not on a pixel level.

It is possible, however, to get away from character square animation to a limited extent by using the line, circle and arc drawing functions of Sinclair Basic.

The same techniques of drawing, erasing and redrawing an image are used but, because you are moving the image by only a few dots or pixels rather than a whole character square, the animation produced will be smoother. The image will not flicker or jump around the screen.

Listing two shows the type of effect which can be achieved using circles.

As a first step in building the sort of movement routine shown in listing two you must look at the two ways in which the Spectrum screen is divided. When printing alphanumeric charac-

*continued on page 48*

## Listing 2.

```
5 REM section one uses CLS
10 FOR k=1 TO 8
15 CLS
20 CIRCLE 88,128,k
30 PAUSE 1
50 NEXT k
60 REM section two uses OVER f
unction
65 CIRCLE 50,50,20: REM draw p
ermanent circle
70 FOR k=1 TO 8: REM start of
animated circle loop
80 CIRCLE 50,50,k
90 OVER 1
100 CIRCLE 50,50,k
110 OVER 0
120 NEXT k
```



## Entry Point

continued from page 47

ters it is split into a grid which has a width of 31 characters on the X-axis, across the screen, and 21 characters on the Y-axis, down the screen.

The screen layout for circle and line drawing, however, relies on a pixel layout. It runs 256 pixels across the X-axis and 176 up the Y-axis. As you can see from the grid in your manual the 0,0 point of the screen is at the bottom left of the screen whereas the character print grid has its 0,0 origin at the top-left.

Apart from PLOT, CIRCLE is the easiest graphics command with which to get to grips. The format is

CIRCLE X,Y, radius.

For instance, to put a circle with radius 20 pixels in the middle of the screen you would put it at X=128, Y=88. The command is

CIRCLE 88,128,20.

The key to animating any line drawn figure is to replace the X,Y, and radius values with numeric variables by which the image can be changed without having to use hundreds of separate instructions.

If you have just one image on the screen, such as a circle, you can erase it ready for redrawing by using CLS,

— see the second section of listing two — but if you have several and want to animate one you will need a new approach and a new function.

The Sinclair Basic OVER function allows a programmer to draw another image on top of an existing one. You may want to draw a moving object as it moves. OVER can also be used to erase a drawing just by redrawing the redundant figure again. The second section of listing two, although

slow due to Sinclair Basic, demonstrates this clever use of OVER.

The main Entry Program, listing three, demonstrates many of the techniques explained in this article. It creates and animates a line of space invader creatures.

Next month I will be creating a keyboard joystick to directly control an animated character, and looking at the ways in which you can manipulate the Spectrum attribute file to speed up animation and create new colours.

### Listing 3. Space invader animation.

```

10 FOR k=0 TO 7
20 READ a
30 POKE USR "P"+k,a
40 NEXT k
50 FOR k=1 TO 7
60 READ a
70 POKE USR "Q"+k,a
80 NEXT k
90 DATA 28,62,42,255,62,28,66,
129
100 DATA 28,62,42,255,62,28,36,
24
200 FOR k=1 TO 10
210 PRINT AT 10,10;"P" P P
P P"
220 PAUSE 20
230 CLS
240 PRINT AT 10,10;" Q Q
Q Q"
250 PAUSE 20
260 CLS
270 NEXT k

```

Lines 10-100 set up the two UDGs which are necessary to animate the character. Information about the underlined graphics characters can be found on the first page of Program Printout.

Line 200 sets up a loop which will execute the animation sequence 10 times.

Line 210 prints out the first position and aspect of the invader character. Its legs are outstretched. The line uses graphics 'P' and there are three spaces between each 'P'.

Line 220 ensures that the eye of the viewer has time to register the first aspect. Change the value of PAUSE to speed up or slow down character movement.

Line 230 erases the first image and line 240 prints up the second image displaced by three spaces along the X-axis. The character now has its legs tucked under its body.

Line 250 introduces another short pause before line 260 erases the image and line 270 takes you back to line 200 and another run over the sequence.

## MASTERFILE

### HOME & BUSINESS FILING SYSTEM

The most versatile database for the 48K Spectrum.

- Up to 36 User-Defined screen/print formats per file, and each can display different selection of fields, in different sequence.
- High efficiency data packing, no wasted filespace.
- Super fast, multi-level file search, record selection capability.
- Up to 51 columns, and 22 lines per record can be displayed.
- From 1 to 22 records at a time can be shown on screen.
- Up to 128 characters per field, 36 fields per record.
- Compatible with Tasman, Euroelectronics and Kempston printer interfaces, and adaptable for most disc systems.

"... the best database for the spectrum is now even better." Sinclair User, Jan '85.

### Design your own print layout with MF-PRINT.

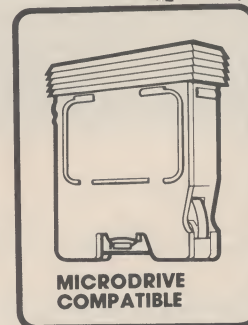
For Masterfile version 09; increases the number of columns to 136+, and has numeric editing and column totals. Almost no reduction in space available for data!

- Masterfile version 09 ..... £14.95
- MF-Print ..... £6.95
- Masterfile with MF-Print ..... £19.95

All available for the 48k spectrum (+) Also available from leading computer stores.

- Enhanced version available for Amstrad at £24.95

The programs are sent on cassette by return post, 1st class, with detailed manual. Prices include VAT and P&P anywhere within Europe.



COMPATIBLE WITH  
Sinclair  
ZX  
Microdrives

- Expenditure.
- Data. Addr.
- Customers.
- Inventions.
- Collection
- Records.
- Hobbies
- Sales. F.
- Stamps
- Wine L
- Catalo
- Telep
- Lists.
- Gan
- File

Campbell Systems

Campbell Systems (Dept. SU )  
57 Trap's Hill, Loughton, Essex  
IG10 1TD, England. Tel: 01 508 5058





### SUPERCHESS 3-5

GUARANTEED TO CONSISTENTLY BEAT ANY SPECTRUM OR COMMODORE 64 CHESS PROGRAM WHATSOEVER

NEW FOR 1985



**STRONG**—100 times faster, 1500 times more intelligent  
**FAST**—from 5 secs to the highest levels, all within tournament times  
**PENETRATING**—at tournament levels it searches at least 7 moves deep, trying tens of thousands of lines of play  
**FRIENDLY**—keeps you informed. Ideal for the expert or as a tutor for beginners  
**SAVES TO MICRODRIVE TO SAVE YOU TIME**

- ★ Save Game & Program to Microdrive
- ★ On-screen clocks for tournament realism
- ★ Unique new way of setting hundreds of levels
- ★ All play within tournament time limits

#### FEATURES

- ★ Unique new way of setting levels by time gives you total control with three different options: tell the computer to match your response times, give it a time limit to play to, or give it an average time to make its moves. And you can force it to play its best move found so far...
- ★ Change sides and levels during play if required
- ★ Stop the game and change positions at any time
- ★ Set up particular games you want to try at any stage
- ★ Will recommend your best move when asked
- ★ Can be set to solve problems up to mate in four
- ★ Extensive library of opening moves
- ★ Option to determine your own display and piece colours
- ★ You can play blindfold chess
- ★ Absolutely suitable for beginners; just set the minimum move time
- ★ Fascinating self-play mode for you to study the game
- ★ TOTAL INFORMATION about the computer's thought processes, including: best line of play found so far, number of positions evaluated, depth of search, internal scoring system, display of previous moves if required, help menu if you should ever get stuck

DEDICATED TO EXCELLENCE IN THE GAME OF CHESS

### ASTRONOMER

THE UNIVERSE OF STARS IN YOUR OWN PLANETARIUM

NEW FOR 1985



**THRILLING** command over the night sky from any time or place on earth  
**SERIOUS** tool for the amateur astronomer — with excellent manual  
 "For those interested in the night sky it should prove fascinating"  
 "User friendly"  
 "Very good value" CRASH Oct 1984

Astronomer has everything in one powerful program... See the night sky of more than 1000 stars from any time or place on earth. Watch it plot the planets or draw in the constellations for you. See close-ups from the Star Atlas of 362 charts. Watch animated detail of our Solar System in motion and see how it changes with the months. Calculate everything needed for serious astronomy to a high standard of accuracy and produce your own tables to save having to buy them. Anything can be transferred to a ZX Printer.

#### FEATURES

- ★ Comprehensive Manual with reference sections
- ★ Suitable for serious astronomical study
- ★ Night Sky views from anywhere on earth
- ★ Works for past, present and future times
- ★ Displays over 1000 stars
- ★ Draws the constellations on your command
- ★ Plots the solar system on the night sky
- ★ Huge Star Atlas for detailed study
- ★ Shows the motion of the solar system
- ★ Calculates position for the Sun, Moon, Planets, Comets and Asteroids
- ★ Then plots them on the Night Sky or Star Chart
- ★ Displays the phases of the moon
- ★ The distance from earth of any object
- ★ Sidereal time and rising and setting times
- ★ Ephemeris section: generate and print your own tables
- ★ Fully-compatible with ZX Printer

£9.95 48K SPECTRUM

### SUPERCODE III

FOR 48K SPECTRUM & SPECTRUM+

NEW FOR 1985

With 150 ROUTINES and 100% MICRODRIVE COMPATIBILITY this has to be the ultimate Spectrum toolkit. It gives you the power to do everything you always dreamed of with your Spectrum in your own BASIC or M/C programs. Born of the earlier Supercodes (which themselves received 5 star reviews) we can claim confidence that we have packed absolutely everything into this State of The Art development. With Interface 1 it transfers easily to microdrive and is recognised by Sinclair as fully compatible. Needs no special knowledge to operate and comes with a comprehensive manual.

#### FEATURES

- ★ Unique Access Program lets you INDEX LIST/TEST/TAILORED/RUN/RELOCATE/SAVE (to tape or microdrive with new or default name)/VERIFY automatically
- ★ Options include EXAMPLE/REPEAT/JUMP/AGAIN/CONT/TIR/DEMO/DIAGNOSIS/MOVE
- ★ 100% menu-driven with on-screen training
- ★ Brilliant user manual
- ★ Routines guaranteed SHORTEST AND FASTEST for all applications

#### ROUTINES INCLUDE

SUPER MICRODRIVE CATALOGUE-TRACE (with 256 preset program speeds)-SCREEN COMPRESS FOR ADVENTURES  
 -ON ERROR GOTO-DOZENS OF RS232 AND MICRODRIVE ROUTINES-ON BREAK GOTO-THE SUPER-RENUMBER  
 (Does everything)-VARIABLE LIST-STRING SEARCH-STRING REPLACE-PAINT FILL-5 SUPER PROGRAMMABLE  
 SOUND EFFECTS-RECORD-REPLAY SOUND/MUSIC-CONFUSE-UNCONFUSE LISTING-REMKILL-PROGRAM  
 CONTRACT/EXPAND-PROGRAM ANALYSE-NUMBER-VAL \$COMPRESS-CHARACTER SWOP/SCRAMBLE/INVERT/  
 REVERSE/ROTATE-WHOLE NEW CHARACTER SET (SG-F)-FLASH+BRIGHT ON/OFF/SWOP-MEMORY FREE  
 -PROGRAM LENGTH-BLOCK LINE+ MEMORY ERASE/FILL/COPY-APPEND CURSOR-SCREEN SAVE/LOAD/SWOP/  
 MERGE/FILL/SEARCH-HEX -DEC-HEX CONVERTERS-REMKILL-DATAFILL-GRID-INK+PAPER CHANGE  
 -ATTRIBUTE SWOP/INVERT/RESET TAPE HEAD READER-PROGRAM PROTECT-PROGRAM BREAK-IN  
 HEADERLESS FILE CREATE-AUTORUN CODE-PROGRAM AS CODE-TAPE COPIER DEFEAT-MICRODRIVE  
 DIAGNOSIS-FAST LOAD MICRODRIVE-SURE SAVE MICRODRIVE-ADAPT TO MICRODRIVE-SURE CLOSE//  
 -STRINGS+PROGRAM CASE CHANGES/SWOP-HEX LOADER-ANALYSE MEMORY-LINE ADDRESS  
 -STARDRAW-FREE SCROLLER-24 LINE PRINTING-LOWER SCREEN CLS-NEW UDG-PROGRAMMABLE BORDER  
 EFFECTS-REMOVE COLOUR-RIPPLE+SHUTTER SCROLL(SL+R)-SCROLL PIXELS-CHARACTERS/ATTRIBUTES,  
 SINGLY OR JOINTLY, UP/DOWN/LEFT/RIGHT, WITH OR WITHOUT WRAP-AROUND, IN A USER DEFINED WINDOW  
 OF ANY SIZE POSITIONED ANYWHERE ON THE SCREEN-SPRITE EFFECTS...and many more besides.

£12.95 48K SPECTRUM WITH EXTENSIVE MANUAL

### BRIDGE PLAYER 2

THE STRONGEST BRIDGE PLAYER YET

NEW FOR 1985



**BRIDGE TUTORS** with full manual & test hands to teach you the game  
**Beginners £5.95 Advanced £5.95**  
**SPECIAL OFFER**  
**Bridge Player 2 & both tutors £19.95**

£9.95 48K SPECTRUM WITH EXTENSIVE MANUAL

★ Play a realistic game of bridge against the computer  
 ★ Computer can play as defender or declarer  
 At last, here is a program with everything the solo Bridge Player ever needed: The computer generates random hands, allows proper bidding in the ACOL system including the Stayman and Blackwood conventions, and then IT TAKES YOU ON, playing both your opponents' hands. Every feature that can be packed into the Spectrum has been included in this program to give you a really satisfying and enjoyable game of computer Bridge.

#### FEATURES

- ★ Versatile bidding routines give you a worthy opponent
- ★ Study your game: post-mortem facility allows rebidding and replaying of any hand
- ★ You can review the bidding or play to previous tricks while playing a hand
- ★ Or input a hand or contract of your choice to test yourself
- ★ COMPREHENSIVE ON-SCREEN INFORMATION DISPLAYS: contract, tricks won so far, cards played in current and last trick, score
- ★ Option to BIAS THE DEAL to give you and your "partner" more high card points if you prefer to play as declarer

A REALLY STRONG OPPONENT FOR A REALLY GOOD GAME OF BRIDGE

### PINBALL WIZARD

FOR COMMODORE 64 AND ANY SPECTRUM



Superb, colourful fast-action graphics and sound give this game the feel of a real arcade pin-table. Realistic launch, flippers, bumpers, high-score, bonus scores and freeball features. Be a Wizard!

"...I thought that a few minutes would suffice, and then found that a couple of hours had passed and I was still at it. Excellent... Pinball Wizard has it made."

CRASH MAGAZINE

"A brilliant idea that's totally absorbing and so addictive..."

YOUR SPECTRUM

"The display is well-designed and colourful and ball movement is very realistic."

PERSONAL COMPUTER GAMES

ANY SPECTRUM—£5.95  
 COMMODORE 64—£6.95

#### NEW FOR OTHER COMPUTERS

AMSTRAD — Bridge Player £9.95  
 Pinball £8.95  
 Draughts £8.95  
 Backgammon £8.95  
 COMMODORE — Bridge Player £9.95  
 SINCLAIR QL — Bridge Player £18.95

Watch this space for Brand new Programs coming this Autumn

**WANTED:** Strong and original programs of an intelligent nature for any of the above computers. Top royalties paid by this reliable company.

#### OTHER PROGRAMS for 48k Spectrum

**Toolkit/Utility—(ALL AT £9.95)**  
 SUPERCODE II  
 FLOATING POINT FORTH (with editor)  
 INTEGER FORTH  
 EXTENDED BASIC  
 SNAIL LOGO (Turtle graphics)

**SPECIAL OFFER** any two of these invaluable programming aids for £17.95.  
 Any three for £23.95 OR £1 OFF any if you also buy SUPERCODE III at £12.95.

JUPITER ACES SUPERCHESS £8.95

#### Classic Games

Othello (powerful) £6.95  
 Airbase Invader (Arcade) £5.95  
 Golfing World (better than the ones you see heavily advertised) £5.95  
 Draughts (very strong program) £5.95  
 Backgammon (excellent) £5.95  
 Yatzee £4.95 Bridge Player £9.95  
 Superschess 3.0 £9.95

**SPECIAL OFFER** Any two classic games £1.50 OFF OR £1 OFF if you buy with one of our new featured programs at £9.95. (Astronomer, Bridge 2 or Superschess 3.5)

#### MAIL ORDER

Simply state which programs and send cheque, postal order or Access number (with expiry date). Telephone for instant credit-card orders. Send SAE for catalogue and return postage for submitted programs.

CP SOFTWARE, Dept (SU7), 10 Alexandra Road, Harrogate, North Yorks HG1 5JS  
 Tel: (0423) 57089

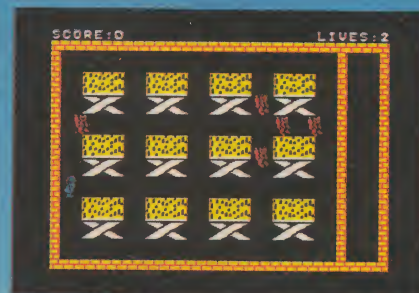
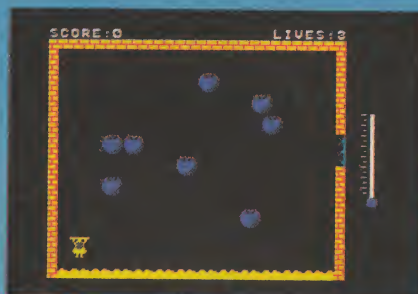
**DELIVERY** by soonest post. Post free in UK. Europe add 80p per program. All other places add £1 per program for surface mail or for Airmail add £2 for first program and £1 for each additional.



# Charlie is here...

in **Charlie and the Chocolate Factory**

43 ROOM  
ARCADE ADVENTURE  
+  
4 ARCADE GAMES + BOOK



**For the Spectrum**

Cassette + Book £9.95

Cassette only £8.50

© Warner Brothers

**Hill MacGibbon**

8 Grafton Street, London W1X 3LA



# Opus.

# DISCOVERY 1

## The Dawn of a new beginning for your Spectrum

Introducing Discovery 1 – quite simply the most advanced and comprehensive disc drive unit yet developed for the Spectrum and Spectrum + computers.

Discovery is the breakthrough in design, performance and price which promises to make other Spectrum solutions obsolete. Just look at its advanced features:

- The very latest 3 1/2 inch disc drive unit
- Peripheral through connector
- Parallel printer port
- Joystick interface
- Video monitor port
- On-board power supply



**But the biggest discovery of  
all is the price – just £199.95**

Upgrading to a dual-drive system is simple with the 'Discovery +' upgrade package – £139.95, or choose a purpose-built twin-drive unit, 'Discovery 2' – £329.95.

### THE DISCOVERY RANGE

- Available through the Opus dealer network nationwide – ring for your nearest stockist – or direct from Opus Supplies. For further details ring us on: 0737 65080 or post the coupon.

Please rush me the following (ALL PRICES INCLUDE VAT & CARRIAGE):  
– Discovery 1 unit(s) at £199.95 each   
– Discovery 2 unit(s) at £329.95 each

I enclose a cheque for £  or please debit my credit card account with the amount of £

My Access ☐ Barclaycard ☐ (please tick) no. is

Name

Address

Telephone

**Opus.**  
Opus Supplies Ltd.

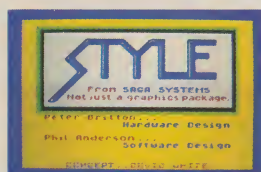
55 Ormside Way,  
Holmethorpe Industrial  
Estate, Redhill, Surrey.  
TELEPHONE: 0737-65080





The SAGA 1 EMPEROR has 67 keys which enable easy access to every function. The SAGA 1 EMPEROR makes obsolete the "stretch requirement" of other keyboards and enhances the ability to touch type. For Business or pleasure the Emperor will make your computing time more productive and enjoyable. Now available for the Spectrum + **ONLY £49.95**

### FOR GREAT GRAPHICS...



UTILITY MENU



COLOUR MENU



### YOU'VE GOT TO HAVE STYLE!

Whether you are 5 or 95, using joystick or GP, full colour STYLE puts you in direct command of your graphics. Already in use in software houses and educational establishments, uses range from screen design to Business to pure fun. Our unique design eliminates endless reading of manuals. STYLE displays all options on screen, enabling you to start designing and flip from menu to menu fast, with some very useful built in routines. STYLE offers exceptional value for money, containing both Software and full Kempston compatible hardware for GP or Joystick operation.

**STYLE £29.95 SAGA GP £79.95 (Graphics tablet for Style)**

#### SOUNDBOOST

Connect and go system puts adjustable sound through your TV Speaker **ONLY £9.95**

#### FLEXICABLE

Now with two connector ports, exceptional value, a must for add-ons **ONLY £12.95**

#### DUSTCOVER

Keep your equipment clean and smart, our popular dustcover does this and more **ONLY £4.95**

#### PERSONAL CARRIER

Or how to store your equipment, our PC! is capable of holding computer, peripherals, magazines and software, and makes everything neat and portable. **A MUST at ONLY £26.95**



Available across the UK and from retailers in the following countries:

AUSTRALIA – BELGIUM – DENMARK – FINLAND – FRANCE – HOLLAND – GERMANY – ITALY – SPAIN – SOUTH AFRICA – SWEDEN – SWITZERLAND – NEW ZEALAND

See us at the ZX Microfair June 22nd

Please send me the following products:

- ☐ \*SAGA 1 EMPEROR at £49.95 (48K or + ?)
- ☐ \*SAGA GP at £79.95
- ☐ STYLE at £29.95 (inc P&P)
- ☐ DUSTCOVER at £4.95 (inc P&P)
- ☐ SOUNDBOOST at £9.95 (inc P&P)
- ☐ FLEXICABLE at £12.95 (inc P&P)
- ☐ \*PERSONAL CARRIER at £26.95

\*Please add £1.50 UK or £4.50 overseas Post and Packing  
DEPT SAGA SYSTEMS LIMITED, 2 EVE ROAD, WOKING, SURREY GU21 4JT  
Name ADDRESS

AMOUNT ENCLOSED £

My Credit Card No. is

SIGNATURE

DATE

Delivery promised within 28 Days



## Continuing his look at Z80 operations Marcus Jeffery loops the loop

**N**OT HAVING the structure available in many languages, such as Pascal, machine code programs rely on the use of jump statements. Those are akin to the Basic GOTO command. A typical machine code jump might look like

```
EA60 3E01 LD A,1
```

```
EA62 C360EA JP EA60
```

which would load the accumulator with the value one, then jump to location EA60 (hex) to repeat the instruction.

When using machine code, we usually use an assembler, and those allow the use of labels to make jumps clearer. You will have seen those before in the mnemonic listings, and a number of labels can be seen in figure two. The above loop could thus be

```
EA60 3E01 LABEL LD A,1
```

```
EA62 C3EA60 JP LABEL
```

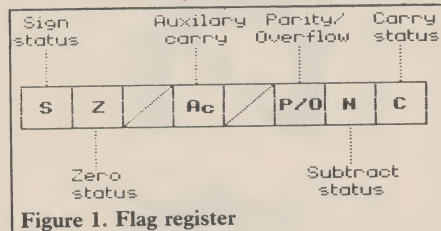
That of course is an infinite loop, and does not allow an exit. The Basic equivalent would be

```
10 LET A = 1 : GOTO 10
```

A very similar instruction to JP is JR – Jump Relative. When using JP, the program always jumps to the specified location. With JR, however, the program jumps to a location relative to your present location. The example above using JR would be

```
EA60 3E01 LABEL LD A,1
```

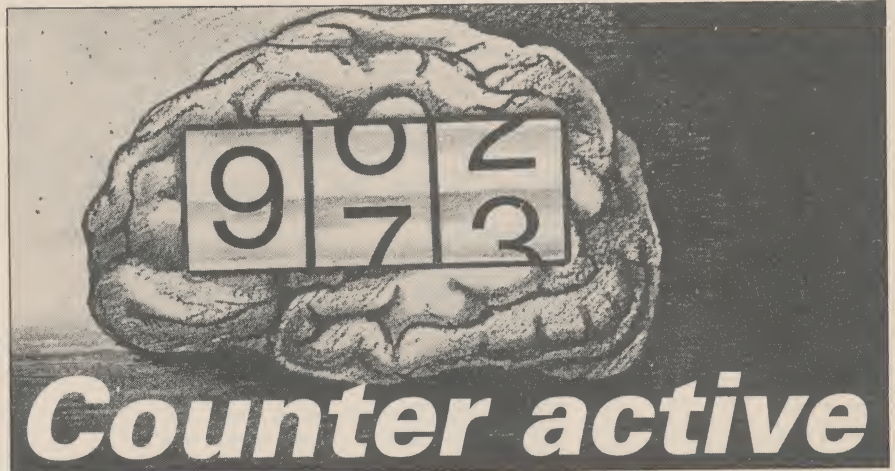
```
EA62 18FC JR LABEL
```



which would jump to the location EA64 – the start of the next instruction – minus four – giving EA60.

The JR instruction has the advantage of being one byte shorter – two bytes instead of three – but that implies that you cannot use it to jump any great distance. The displacement byte is assumed to be PLUS – forward – if it is less than 80h and MINUS – backwards – if greater than 7Fh. In the latter case, the value is calculated as 100h (256) minus the value given.

We can check this with



```
Fch = 252
```

```
256-252 = -4
```

```
EA64h-4 = EA60h
```

That means that we have a range of 00h-7Fh (0 to 127)

and FFh-80h (-1 to -128)

The other advantage of using JR, rather than JP, is that it is relocatable. We will be discussing this in a later article, but essentially it implies that the actual address is not used.

Of course, just as in Basic, jumps are not much use on their own. Their real power is only realised when they are combined with conditions. Z80 machine code does not have the flexibility of Basic when testing for conditions.

All testing is carried out on the hitherto unused F (Flag) register. The individual bits of this register are used as shown in figure one. The values of the bits in the register are set based on the last operation, so they can then be tested using special instructions.

All the jump instructions are shown in figure six, but here is a typical example, showing how to form a loop

```
LD HL,1
LOOP ADD HL,HL
DEC A
JR NZ,LOOP
```

The HL registers are initially loaded with the value of one. The ADD instruction effectively multiplies HL by two. The value of A is then decremented, and if Not Zero (NZ) a relative jump is made, otherwise the code continues. This small piece of code has the effect of placing the value of  $2^A$  into HL, assuming that A is greater than zero and not too large to cause HL to overflow.

Special instructions are also provided whose only job is to set flags in the F register. Those are the compare instructions – see figure six. In the counter program we use.

```
CP 8Ah
```

That subtracts the data (8Ah) from whatever value is currently in the accumulator. The flags are set, but the value of the accumulator is left unchanged. The next instruction is

```
JR NZ,CHANGE
```

which will now jump to the label CHANGE if the contents of the accumulator are not 8Ah – that is  $\text{Acc} - 8\text{Ah} \neq 0$ .

One final test instruction which we will look at is BIT. That can be used to test individual bits of a particular register or location. In our program

```
BIT 7,A
```

tests to see if the most significant bit – the top bit, counting from bit 0 left to right – in the accumulator is set. If the specified bit is set – in other words, is a '1' – then Z (Zero) in the Flag register will be False. That may seem complex at first, because the complement of the specified bit is placed into the Z flag. Have a look at the program to see how this works.

Other bit instructions which you may come across are SET and RES, which place a '1' or '0' respectively into a specified bit. Variations of this instruction are shown in figure six.

We have seen how to implement a loop using a conditional jump instruction. Z80 also has a specified abbreviated loop instruction called DJNZ. This stands for 'Decrement the B register and Jump to a given label if Not Zero'.

So, if we wanted to improve the example above, by using the B register instead of A, we could write

*continued on page 54*



continued from page 53

```
LD HL,1
LOOP ADD HL,HL
DJNZ LOOP
.
```

There is one last set of instructions to look at before we deal with this month's program. Those are the 'stack' operations. When using machine code, it's very easy to run out of registers to use. One way of dealing with that is to save the register to a

spare location, use the register for another task, then reload it from the location.

There are a number of disadvantages with this method, and it is such a common problem that there are a number of special instructions to deal with it. Those are called PUSH and POP. A stack can be thought of as a pile of plates. If a plate is PUSHed onto the top of the pile, then it must also be the first removed - POPped.

Registers may be pushed onto the stack in pairs - A+F, B+C, D+E and H+L - and popped from the stack in the same way. A pointer to use the top of the stack, surprisingly known as the stack pointer (SP), is automatically updated for you.

The only thing to remember is to take the register pairs off the stack in reverse order to which they were put on. This is known as a LIFO - Last In, First Out - structure.

Now the program. The idea is to implement a digital counter, which will automatically update its value by one whenever it is called, and display the new value on the screen.

		ORG	60000	
		LOAD	60000	
EA60 21BCEA		LD	HL,NMBRS	;HL = start of digits
EA63 3E80	OVFLOW	LD	A,80H	;set top bit in A
EA65 86		ADD	A,(HL)	;add previous digit
EA66 3C		INC	A	; and update it
EA67 77		LD	(HL),A	;replace digit in memory
EA68 FE8A		CP	8AH	;has it reached 10?
EA6A 2005		JR	NZ,CHANGE	;go on if not, else
EA6C 3680		LD	(HL),80H	;reset digit to zero
EA6E 23		INC	HL	;increment to next digit
EA6F 18F2		JR	OVFLOW	;go back for next digit
EA71 21C1EA	CHANGE	LD	HL,DSPLY	
EA74 2B		DEC	HL	;zero overflow digit
EA75 3600		LD	(HL),0	
EA77 0608		LD	B,8	;B counts 8 shifts
EA79 21BCEA	NSHIFT	LD	HL,NMBRS	;HL point to digits
EA7C ED5BC1EA		LD	DE,(DSPLY)	;DE = bottom right of display
EA80 7E	NDIGIT	LD	A,(HL)	;get digit in A
EA81 CB7F		BIT	7,A	;is top bit set?
EA83 2824		JR	Z,EShift	;jump to finish if not
EA85 D5		PUSH	DE	
EA86 E5		PUSH	HL	;stack registers
EA87 F5		PUSH	AF	
EA88 62		LD	H,D	
EA89 6B		LD	L,E	;HL = Display line above DE
EA8A 25		DEC	H	
EA8B 0E07		LD	C,7	;C counts 7 shifts
EA8D 7E	SCROLL	LD	A,(HL)	;move a byte to the
EA8E 12		LD	(DE),A	; line below
EA8F 15		DEC	D	;move HL & DE pointers
EA90 25		DEC	H	; up by one line
EA91 0D		DEC	C	
EA92 20F9		JR	NZ,SCROLL	;repeat 7 times
EA94 F1		POP	AF	;restore AF register
EA95 CB27		SLA	A	
EA97 CB27		SLA	A	multiply A by 8
EA99 CB27		SLA	A	
EA9B 80		ADD	B	;add shift count
EA9C C680		ADD	A,80H	;add lsb loc "0"
EA9E 6F		LD	L,A	
EA9F 263D		LD	H,3DH	;HL = 3D80H+8*digit+shift
AAA1 7E		LD	A,(HL)	
AAA2 12		LD	(DE),A	;display appropriate byte
AAA3 E1		POP	HL	;restore digits to HL
AAA4 23		INC	HL	;move to next digit
AAA5 D1		POP	DE	;restore display position
AAA6 1B		DEC	DE	;previous display position
AAA7 18D7		JR	NDIGIT	;do next digit
AAA9 1E01	EShift	LD	E,1	
EAAB 76	DELAY	HALT		;delay to give user time
EAAC 1D		DEC	E	;to see the scrolling
EAAD 20FC		JR	NZ,DELAY	
EAAF 10C8		DJNZ	NZShift	;repeat eight times
EAB1 21BCEA		LD	HL,NMBRS	;HL = Start of digit data
EAB4 0604		LD	B,4	;there are four digits
EAB6 CBBE	RESBIT	RES	7,(HL)	;top (changed) bit = 0
EAB8 23		INC	HL	;next digit
EAB9 10FB		DJNZ	RESBIT	
EABB C9		RET		
EABC 09090909				
EAC0 00	NMBRS	DB	9,9,9,9,0	
EAC1 714F	DSPLY	DB	71H,4FH	
		END		

Workarea - A692 to A82B  
ORG end - EAC3  
LOAD end - EA60

Figure 2. Assembly code

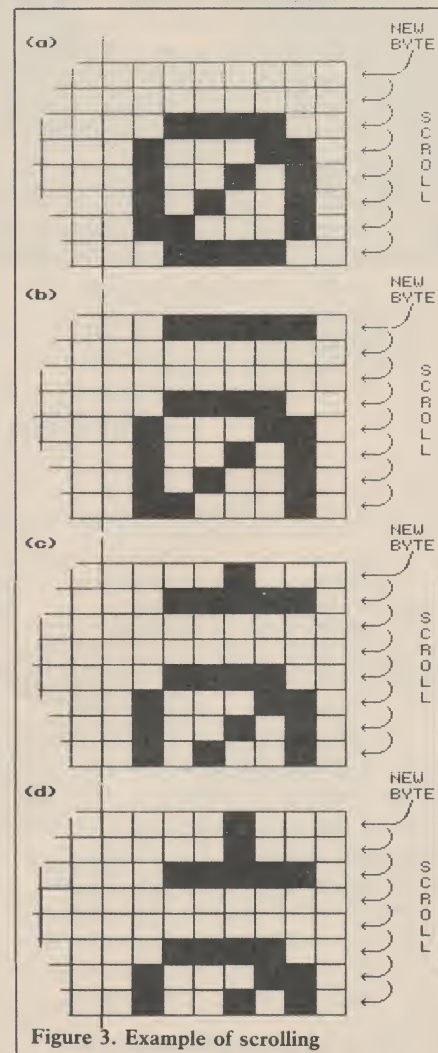


Figure 3. Example of scrolling



The clever bit is to ensure that this update is shown graphically as rotating digits, just like the real digital display. The assembly code for this – figure two – can be divided into three distinct stages

EA60-EA76 which adds one to the four-digit counter.

EA77-EAB0 which does the on-screen scrolling.

EAB1-EABB which resets, ready for the next call.

The comments should enable you to follow the program, but here are a few points. When incrementing the four digits – each held in one byte, including a fifth overflow byte – the top bit of the digit is set if it has changed. That is the reason for the test 8Ah (Top Bit + 10).

Figure three should give some indication of how the scrolling works. The code from EA88 to EA94 scrolls the necessary characters down by seven pixel lines, and the code to EAA2 finds the value of the next byte to be placed on the screen from the Spectrum character set. The four instructions from ESHIFT create a delay loop, to give you time to see the display. To halve the speed of the scrolling, increase the number loaded into E, at ESHIFT, by one.

Finally, the two numbers held in location EAC1 and EAC2 – label DSPY – are the bottom-right screen address of the four bytes displayed. Figure four gives a list of the values you can place in here to move the counter on the screen.

Figure five gives a Basic loader program and example calling routine.

4703	4704	4705	...	471E	471F
4723	4724	4725	...	473E	473F
47C3	47C4	47C5	...	47DE	47DF
47E3	47E4	47E5	...	47FE	47FF
4F03	4F04	4F05	...	4F1E	4F1F
4FE3	4FE4	4FE5	...	4FFE	4FFF
5703	5704	5705	...	571E	571F
57E3	57E4	57E5	...	57FE	57FF

Figure 4. Screen display locations (hex)

You will notice that lines 40 to 70 use our special abbreviations for graphics characters, so please read the instructions on the first page of Program Printout.

You might like to change the program. First of all, to make the program count downwards, rather than up, change the following

Line 2010: 3C to 3D  
FE8A to FE7F  
Line 2020: 3680 to 3689  
Line 2170: 0909090909 to 0000000000

```

10 CLEAR 59999
20 GO SUB 1000
30 CLS
40 INK 2: PRINT AT 10.13: "(1g4
:4*23:27)"
50 PRINT AT 11.13: "(1g5:4*sp:2
5)"
60 PRINT AT 12.13: "(1g1:4*1g3:
1g2)"
70 INK 1: PRINT AT 11.14: "(4*s
p)"
80 RANDOMIZE USR 60000
90 GO TO 80
100 STOP
1000 REM HEX LOAD ROUTINE
1010 DEF FN p(x)=CODE h$(x)-48-7
*(CODE h$(x)>=65)
1020 LET byte=0
1030 RESTORE 2000
1040 READ start
1050 READ h$
1060 IF h$="*" THEN GO TO 1160
1070 IF LEN h$<>2*INT (LEN h$/2)
THEN PRINT "Odd number of hex
digits in: ";h$: STOP
1080 FOR i=1 TO LEN h$
1090 IF NOT ((h$(i)>="0" AND h$(
i)<="9") OR (h$(i)>="A" AND h$(i
)<="F")) THEN PRINT "Illegal h
ex digit: ";h$(i): STOP
1100 NEXT i
1110 FOR i=1 TO LEN h$ STEP 2
1120 POKE start+byte,16*FN p(i)+
FN p(i+1)
1130 LET byte=byte+1
1140 NEXT i
1150 GO TO 1050
1160 PRINT "Code entered"
1170 PAUSE 150
1180 RETURN
2000 DATA 60000,"21BCEA","3E80"
2010 DATA "86","3C","77","FE8A"
2020 DATA "2005","3680","23"
2030 DATA "18F2","21C1EA","2B"
2040 DATA "3600","0608","21BCEA"
2050 DATA "ED5BC1EA","7E","CB7F"
2060 DATA "2824","D5","E5","F5"
2070 DATA "62","6B","25","0E07"
2080 DATA "7E","12","15","25"
2090 DATA "0D","20F9","F1"
2100 DATA "CB27","CB27","CB27"
2110 DATA "80","C680","6F"
2120 DATA "263D","7E","12","E1"
2130 DATA "23","D1","1B","18D7"
2140 DATA "1E01","76","1D"
2150 DATA "20FC","10C8","21BCEA"
2160 DATA "0604","CBBE","23"
2170 DATA "10FB","C9","09090909"
2180 DATA "00","714F","*"

```

Figure 5. Basic program

Line 2180: 00 to 09  
This will then count down from 9999. Note that all the digits change when the routine is first called, ensuring that all the digits are displayed.

If you would like to count from a different number, simply change the start digits at the end of line 2170, and print the start number in line 70, instead of the four spaces. The INK

statement in line 70 also specifies the colour of the digits.

It is quite a simple matter to modify the code to work with more than four digits. To add a fifth digit, change the start number (line 2170) to a five-digit figure. You must also change the address of the display location – presently EAC1. So alter the C1EA to read C2EA in lines 2030 and 2050.

JP	address	– jump to address.
JP	cond,address	– jump to address if condition is true. where condition is: NZ – Non-Zero Z – Zero NC – No Carry C – Carry PO – Parity Odd PE – Parity Even P – Positive M – Negative
JP	(HL)	– jump to the address specified by the HL register pair.
JR	offset	– jump to present address plus offset.
JR	cond,offset	– jump to present address plus offset if the condition is true, with condition: NZ – Non-Zero Z – Zero NC – No Carry C – Carry
CP	data	– set flags for result of Accumulator minus data.
CP	reg	– set flags for result of Accumulator minus register.
CP	(HL)	– set flags for result of Accumulator minus the contents of the location held in the HL register pair.
BIT	bit,reg	– test specified bit in register.
BIT	bit,(HL)	– test specified bit in contents of location addressed by HL register pair.
SET	bit,reg	– set specified bit in register.
SET	bit,(HL)	– set specified bit in contents of location addressed by HL register pair.
RES	bit,reg	– reset specified bit in register.
RES	bit,(HL)	– reset specified bit in contents of location addressed by HL register pair.
DJNZ	offset	– decrement the B register. If the contents are NOT ZERO, then jump to present address plus offset.
PUSH	rp	– write register pair to top of stack (rp = AF, BC, DE or HL).
POP	rp	– read register pair from top of stack (rp = AF, BC, DE or HL).

Figure 6. New Z80 instruction codes



# "YOU MUST BE THE BEST SOFTWARE FIRM IN THE WORLD"

(L. Hallard, London)

FOREIGN ORDERS WELCOME, satisfied customers in over 40 countries for 3 years. UK prices include VAT: export prices are the same, plus p&p. Pay by sterling cheque, bank draft or postal order. It's faster to order by phone from any country with your VISA, EUROCARD, MASTERCARD OR ACCESS. Call 01-789 8546, 24hrs. WE ALWAYS TRY TO SEND YOUR PROGRAMS ON THE DAY WE GET YOUR ORDER, that's why it's called Speedysoft! All programs normally in stock. Faulty tapes replaced immediately. ALL PROGRAMS FOR SPECTRUM AND SPECTRUM PLUS. FREE 32-PAGE ILLUSTRATED CATALOGUE WITH EVERY ORDER. Send £1.00 (refundable) for catalogue only.

**STRIP POKER** "Even without the strip feature, this game would still be very compulsive ... the scene where the girl removes her dress is very well done ... the movements are all natural and the effect is quite convincing." (Amstrad User) Very well-animated game of 5-card draw poker with some of the biggest graphics you have ever seen. You can raise, stand, fold or bet but you cannot cheat. Mindy, modest Mindy, is your opponent. Be careful of her bluffing. Mind you, she doesn't always bluff... NO STICK. (Knightssoft) CASSETTE £6.95

**AUTOMATA 10** Staggering value-for-money. 10 of Automata's famous games for only £1.00 each! PI-IN-ERE: CRUSOE: DARTZ: NEW WHEELS, JOHN?: MORRIS MEETS THE BIKERS: PI-BALLED: PI-EYED: PI-ROMANIA: OLYMPIMANIA: YAKZEE. Kempston stick O.K. (Automata) CASSETTE £10.00

**STARION** "Has nearly everything you could wish for: speed, variation and superb graphics ... the best wire-frame graphics and transformations since ELITE." (PersCompNews) "Not only does the game test an arcade gamer's skills to the limit, but the word and historical puzzles force the grey matter into overdrive. I am very impressed ... the effect is amazing ... absolutely worth the money. 94%" (Crash) The nearest you'll get to ELITE until you get the original. ZX Printer OK for screen dumps. 1 or 2 players. Definable keys. DEMO. SAVE. GREAT! STICKS: Kempston/Cursor. (Melbourne House) CASSETTE £7.95

**MINDER** "In terms of the way it reflects the TV program and playability, the game is better than anyone could have hoped for and being able to type in things like 'Leave it out, squire' and 'I'm sorry, I don't know what you mean.' is bliss ... definitely double-sweet, my son." (PopCompWkly) "A good game based on an excellent series ... excellently animated." (HomeCompWkly) 16-page manual helps explain this brilliant graphic trading game to anyone who hasn't seen the TV series. The best graphical talking characters and the best dialogue in any program so far. NO STICKS. (DkTronics) CASSETTE £9.95

**SQUASH** "Well researched and produced, easy to play but very difficult to beat." (CTW) "So close to the real thing that it is not only great fun to play but will also teach players at all levels to improve their game." (Jonah Barrington) For 1 or 2 players. DEMO at all 4 skill levels. It not only plays (very well) but also talks to you (not very well). Great animation. ALL STICKS. (New Generation) CASSETTE £7.95

**DRAGONTORC** "A BRILLIANT PROGRAM ALL ROUND; excellent sound and graphics and a great addictive quality ... well worth having." (PersCompToday) Over 250 locations and more than 80 individual creatures from over a dozen different races in this magical sequel to 'Avalon'. Wonderful follow-up to a great graphic adventure. STICKS Kempston/Interface2/Cursor. (Hewson) CASSETTE £7.95

**HOLY JOYSTICK** "Hilarious breathtaking, neckbreaking trip through the world of adventures ... the contents really are superb." (Micro Adv) "An incredible game, a must for all experienced adventurers." (ZX Computing) NO STICKS. CASSETTE £5.00 M'DRIVE CART £7.00

**PAINT PLUS** "I've never had so much fun with a utility program." (ZX Comp) "If you've been looking for a Spectrum graphics aid this seems like one of the best!" (PopCompWkly) This PAINTBOX has 24 new copmmands and an 88-page colour manual. The very best Spectrum graphics kit so far. STICKS Kempston/Cursor. (Print'n'Plotter) CASSETTE 9.95

## COMPLETE MACHINE CODE

"The best machine-code tutor ... no serious Spectrum programmer should learn machine-code without it." (Crash) "Simple to use ... the lessons are comprehensive enough to help even the beginner ... excellent introduction to assembly language ... very user-friendly." (Sinclair User) NO STICKS. (New Generation) 2 CASSETTES £14.95

## FORMULA ONE

"Really good strategy game ... it's one of the best." (PopCompWkly) "A rare example of a simulation which combines attractive displays, good game structure and an exciting theme." (Sinclair User) 1 to 6 players. Full simulation of a Grand Prix Racing Season. 16 races. Invest your sponsors' money in drivers, pit-crews, cars: guess at the weather forecast's accuracy and choose your tyres. Then watch the races run in good, big graphics. STICKS Most: (CRL) CASSETTE £7.95

**SPACE SHUTTLE** "Superb graphics, the cockpit vibrations during the launch really give the impression of taking off." (HomeCompWkly) Fly the Space Shuttle DISCOVERY. Launch, rendezvous and dock with an orbiting satellite 210 miles above Earth, then return to Edward's Air Force Base. Progressive difficulty. DEMO. Great graphics and a very well illustrated manual. Photograph the final screen for your free 'wings'. STICKS: Kempston/Interface2/Cursor. (Activision) CASSETTE £8.00

**SUPERCODE 3** "This amazing collection brings the speed of m/code within the reach of any programmer familiar with BASIC." (PersCompToday) "An excellent collection of routines and utilities that no serious user should be without." (C.T.W.) Save/load to/from tape/Microdrive. 152 brilliant Machine-code routines. Helpful instruction manual. The ultimate Spectrum Toolkit. 100% menu-driven. On-screen training. If you're writing in BASIC or m/c, you need this fast! NO STICKS. (CP Software) CASSETTE £12.95

**MINI OFFICE** "QUITE EXCEPTIONAL VALUE ... the first affordable program suite I have seen ... I strongly recommend beginners get this first." (PersCompNews) 4 programs on one tape, all working with EPSON-compatible printers. WORDPROCESSOR: DATABASE: SPREADSHEET: GRAPHICS. An amazing collection at an unbelievable price, no wonder we've sold so many! NO STICK. (Database) CASSETTE £5.95

**SHADOWFIRE** "BOUND TO START A NEW CRAZE ... the operating system will probably become even more popular than the traditional adventure format. If you can, you should play SHADOWFIRE." (PopCompWkly) (PopCompWkly) THE WORLD'S FIRST ICON-DRIVEN ADVENTURE. Makes your Spectrum seem a little like a Macintosh! The best yet from the 'Doomdark' company. Fascinating graphic adventure without words or typed commands as you organise the Enigma team. 3 different missions. Stunning graphics. 20-page full-colour manual. You have 100 minutes to win! Demo helps a bit. STICKS Kempston/Interface2. (Beyond) CASSETTE £9.95

VISA  
ACCESS

SPEEDYSOFT  
01-789 8546 (24 HRS)

EUROCARD  
MASTERCARD

POST TO: SPEEDYSOFT (SU32)  
87 HOWARD'S LANE, LONDON SW15 6NU, ENGLAND.  
For CATALOGUE ONLY, send £1 cash. Refunded with your first order.  
I own a SPECTRUM. I enclose a cheque/PO payable to SpeedySoft  
OR charge my VISA/ACCESS/EUROCARD/MASTERCARD

No.

Signature:  Expiry Date:

Please write clearly. If we can't read it, you won't get it.

Name:

Address:

Postcode:

PHONENO: if any, in case of query

Program Name	Price
Postage & Packing	UK add 75p per order
	Europe ADD £1.00 per program
	Outside Europe ADD £1.50 per program
	Total Order



*Trade and Export enquiries welcome.*



Once upon a time there were six happy Imagine programmers working their guts out on the legendary mega-game **Bandersnatch** up in Liverpool.

There was Ian Weatherburn, the games fanatic.

There was John Gibson, the ace programmer.

There were Steve Cain and Ally Noble and Karen Davies, the artists.

There was Kenny Everett, no relation.

And there was a character at the top, where all the hype and the Ferraris and the duff cheques whirled about in a dust storm of vituperation and desperate attempts to keep going just another month, just another week, and his name was Dave Lawson.

"Do you want to know what the

Delaney at Beyond Software for half an hour and after that we were Beyond's men."

The idea was that Steve and Ian would set up a new company, Denton Designs, to write games for other software houses. For Steve, the attraction of Beyond had a lot to do with their products. "They had **Lords of Midnight**. Sometimes you see things by other people and you say 'I wish I'd done that'. Well, we thought we could produce things like that without having people of the calibre of Bruce Everiss around to cock it up for us."

Steve was anxious to include the other members of the team in the new deals. He'd been to college with Ally and Karen, and didn't want to see his friends sink without trace. The trouble was that most of them still wanted to believe in Dave Lawson. Then John

# Spirit of Imagine

## Whatever became of the Imagine team? Chris Bourne meets the folk who aim to put the Mersey back on the map

brief was for **Bandersnatch**?" asks Steve Cain. He's going to tell us anyway. "Dave Lawson came to us and said 'You've got four weeks to produce the best game graphics the world has ever seen'. That was all. We took four months and it still wasn't finished."

Then Imagine went bust, and the **Bandersnatch** team was out of a job, along with dozens of others who gave their soul for the most spectacular, romantic and, ultimately, sordid software company this country is ever likely to see. Dave Lawson and Ian Hetherington, both directors, wanted to keep the **Bandersnatch** team. They said they could get money in America.

Steve and Ian Weatherburn thought differently. "They told us the market in the UK was dead, you wouldn't get more than £5000 for a game tops, even if it was a number one."

They made a few phone calls and soon found out that the market was very much alive. "We talked to Bill

and Kenny were served with writs along with Steve, so they joined up. After that, Ally and Karen came in.

"Beyond agreed to take two games from us, fund our development and premises. They wanted us badly but weren't prepared to take an almighty risk." Meanwhile Ocean was getting in on the act. The Denton team was turning into a hot property.

"All of a sudden up pops Steve Blower. He used to be at Imagine too, but he joined Ocean. Had we finished **Bandersnatch**? As far as we were concerned we were tied up with Beyond, and **Bandersnatch** would never see the light of day. But we met Ward, nevertheless."

David Ward, chairman of Ocean, told them not to worry about **Bandersnatch**. "Write a different game," he said. "Write one for me and I'll give you a contract for three and buy your old equipment from the receiver at Imagine." So Denton Designs signed up with Ocean as well and

wrote **Gift from the Gods**. "It did OK, about 25,000 copies," says Steve. The game was designed in the main by John Gibson, and featured a large animated figure of the Greek hero Orestes searching a vast labyrinth for his sister Electra.

Denton Designs was split six ways between the original team, with everybody having an equal share. But Ian Weatherburn was unhappy. "For Ian, Imagine was heaven on earth," says Steve. "He wanted Denton to be just like Imagine. When we signed the contract to do **Shadowfire**, Ian said we had to do it his way or he would leave. So we sacked him. Actually, he's now working for Ocean."

**Shadowfire**, which we tipped as a *Sinclair User* Classic last month, is the most impressive piece of software so far programmed by Denton Designs. An icon-based adventure, it dispenses with text and uses menus full of pictures of objects. You move a cursor around these pictures, or icons, to



The many faces of Denton: Ally Noble, John Heape





Heap, Dave Colclough, John Gibson, Steve Cain, Karen Davies.

shouldn't but we had to." Contract work demands it — you cannot afford to turn people down. If you haven't got enough programmers you have to hire some more. That's the theory, anyway.

Certainly Denton has been in demand. Apart from **Gift from the Gods** and **Shadowfire**, the list of credits includes **World Series Baseball** for Imagine 84, **Spyhunter** for US Gold, and, yet to be released, **Roland Rat** and **Frankie goes to Hollywood** for Ocean, **Shadowfire II** and **Bouncers** for Beyond, plus, no doubt, more secret projects.

The games fall into two categories. There's conversion work, like **Spyhunter** and **Roland Rat**, and there's Denton's own which seem to be considerably superior. The Frankie game, for example, is Denton's own work,

"Writing software is as creative as writing a song. We need to appeal to people of all ages"

and quite superb. "Frankie was designed by four non-games-playing people and that could prove to be really good," says Steve.

John Gibson, Kenny Everitt, Ally Noble and Karen Davis are the lucky quartet. Lest you find the naming of names boring, know that Steve and his pals are saddened by the lack of recognition given to the programmers and artists. "These days when you pick up a paper it shouldn't be 'Bill Delaney of Beyond says . . .'. It should be 'Mike Singleton says . . .'. It's a fair point; Mike wrote **Lords of Midnight**, and he's a freelance.

"It works because we're all close friends," says John Gibson, taking a brief break from his labours on Frankie. "We argue a lot and call each other names but we're still friends. If my games lack anything I suppose they lack gamesmanship."

"Your games don't lack anything at all," soothes Karen.

"No, it winds me up sometimes," says John. "A game like Elite's **Airwolf** gets slagged off by all the reviewers but gets to number two in the charts. Other games with rave reviews

*continued on page 60*

choose your action or movement.

The game is very much Denton's, although published by Beyond. "Beyond has never pressed us on a game, although they do test it, and say whether it has appeal," says Steve. "If we had a game and both Beyond and Ocean didn't like it we would respect that. They have a pretty good track record.

"On the Commodore 64 **Shadowfire** there was a bug. A phantom would appear and attack members of the Enigma team. We couldn't work out why, so we decided it was Zoff's pet. It turned out there was a spelling mistake on a single mnemonic in the machine code somewhere. We've taken the bug out now, so the bit in the booklet about Zoff's pet doesn't matter any more."

**Gift from the Gods** was a direct descendant of **Bandersnatch**, in that it had a large animated figure wandering through the screens. But the icon system on **Shadowfire** was new. Ian

Weatherburn conceived the idea of an icon-driven adventure back in the Imagine days, but nothing was ever done about it. Denton sees the icon system as something on which a whole range of products could be based.

"After Christmas we may change direction and move away from games," ruminated Steve. "The icons could be used to produce a library of routines for education software, and maybe special software for magazines and the like."

Commodore freak Dave Colclough joined Denton after Ian left, and more programmers have come in since. They are mostly ex-Imagine people — from Thor, set up by Imagine director Mark Butler, or Concept, a similar outfit to Denton but responsible for the Argus Mind Games series. A sense of déjà vu creeps in. Wasn't it this that went wrong at Imagine — growing too fast?

"We had to expand or go bust," says Steve, simply. "People say we



continued from page 59

don't sell at all." Haven't the distributors and retailers got something to do with that? "Smiths and Boots are important, yes. I strongly object to people like Boots who say they won't stock a game because the box won't fit on their shelves."

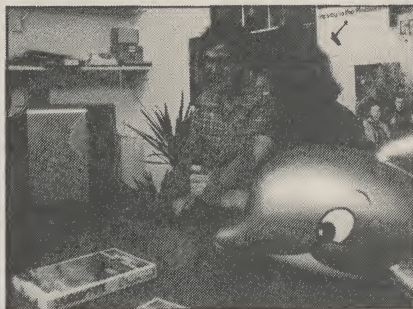
If anything has crossed over from Imagine, it's the sense that programmers are creative people, artists in their own right, and that software is part of the entertainment industry. "It's just as creative as writing a song," says Steve. "I'm talking from experience." Mind you, Steve Cain never made any money out of his songs.

"I'd like to see designers and programmers seen as creative people. Software is too much regarded as a toy. The vital statistics of the end user are changing." What? They're getting fatter? "No, they're getting older. We need to appeal to people of all ages, instead of just producing masses and masses of arcade-type games. Mind you, it's probably about time for an old-style shoot-em-up."

Games design does not come easily, according to Steve. The idea of having a team of characters in **Shadowfire**, the Enigma team, was so the player

would identify with at least one. "Karen insisted the game needed a female character so we invented Sevrina," explains Steve.

The desire to include female characters and the like opens up some of the moral questions about games. Does Denton Designs have strong feelings about the sort of games they write — particularly since the programs are written for other companies? After all, the company has worked for US Gold



in the past, who brought out **Raid over Moscow**, criticised for its political overtones.

"We wouldn't see that sort of thing as a game idea in the first place," says Steve after much reflection. "There are definitely some people here who would feel unhappy about it, although I have no strong feelings myself."

Violence in itself however is not an objection. Christmas will see the launch of **Bouncer**, which is what Denton is calling a new game for Beyond on its Monolith label. "The game has gladiators of the future trying to propel a metal ball to a goal. There are eight character types to choose from and you can play against an opponent."

The success of Denton in a short space of time has much to do with the relaxed, enthusiastic attitude of the team. It is also a benefit not to have to worry about advertising, duplication, packaging, distribution and all the other expensive aspects of producing games which so often bankrupt software houses. Are we seeing the birth of a new type of programming house, where publishers seek out the creative team they require for particular projects? Steve is quite convinced of the rightness of Denton's approach.

"It will be more important to our clients to have our names on the box than theirs," he says, confidently. At Imagine they tried to conquer the universe, and failed. Today they'll be happy with a decent slice of the market — and seem set to capture a lot more.

# THETFORD MICROS

## SPECIALIST IN SPECTRUM REPAIRS

21 Guildhall Street,  
Thetford,  
Norfolk,  
Tel: (0842) 61645

Service Department  
Unit 4, Leyland Close,  
Thetford, Norfolk,  
Tel: (0842) 65897

## Why wait weeks to get your Spectrum repaired

We at Thetford Micros (Service Dept) have just put into operation a new fully equipped workshop to allow us to keep up our 24 Hours "Guaranteed" repair service on your Sinclair Spectrum computers. We have fully trained staff and our workmanship and repair work is fully warranted to give you the confidence that your micro is in the safest hands. Any first time repairs will be £16.00 + VAT + £2.00 postage and package = total £20.40 for any repair on your computer. We also specialise in the repair of the Spectrum microdrive, Interface I, II and ZX printers at the same standard charge. Payment may be made by cheque, Barclaycard, Access, American Express, or Postal Order. So all you have to do is post your faulty Spectrum to us along with payment and we will do the rest, your repaired Spectrum will be back in the post within 24 hours (we never sleep!) and depending on the post office it will be back with you within 5-6 days. We have already undertaken repairs from all over England and the continent.

*We also undertake repair work on Acorn, Commodore, Amstrad, Texas, Dragon etc., at the lowest of prices.*

**Any problems with your micro phone Pete on the above telephone numbers — I'll be only too pleased to assist.**

*We also produce our own Spectrum "48K Upgrade Kits" complete with fitting instructions.  
£24.00 (VAT+P&P) inclusive.*

*Switchable UHF — composite video can be fitted to your Spectrum for only £14.00+VAT+£2.00 P&P.*

**Trade enquiries welcome**



# TOP QUALITY CUT PRICE HARDWARE

## FAST

### For Immediate Delivery

Stock No	Item	All Inc Price
----------	------	---------------

G120	QUICKSHOT II Joystick	8.90
KP150	Kempston Formula 1 Joystick	14.95
BU205	Bud Pilot Joystick I'face	7.95

An Industry standard joystick interface using the IN31 or 'Kempston' system.

DK290	DKTronics Dual Port Joystick I'face	11.65
-------	-------------------------------------	-------

Allows connection of two joysticks, one using IN31, and the other the cursor keys.

DA230	Datel Games Ace Joystick I'face	17.95
-------	---------------------------------	-------

An IN31 system with sound amplification through the TV speaker.

PR240	Protek Switchable Joystick I'face	15.45
-------	-----------------------------------	-------

Switchable between IN31, Cursor keys and Sinclair Interface 2 standards.

DA250	Datel Turbo Ace Joystick I'face	22.45
-------	---------------------------------	-------

Switchable as PR240 with sound amplification through the TV speaker

DK270	DKTronics Programmable I'face	19.95
-------	-------------------------------	-------

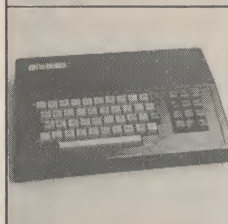
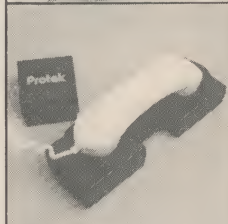
BU280	Bud Programmable I'face	18.65
-------	-------------------------	-------

SA330	Saga 1 'Emperor' Keyboard	44.95
-------	---------------------------	-------

DK340	DKTronics Keyboard	33.00
-------	--------------------	-------

KP150	Kempston Centronics 'E' Printer I'face	34.95
-------	--	-------

Plug-in-and-go with software held on EPROM. Connects Spectrum to standard Centronics printers.



DK530	DKTronics Centronics Printer I'face	34.95
-------	-------------------------------------	-------

As KP150 with relocatable software supplied on tape.

DK630	DKTronics Speech Synthesizer	21.95
-------	------------------------------	-------

Supplied with driving software and its own speaker.

CU620	Currah Microspeech	18.75
-------	--------------------	-------

Plug-in-and-go system putting speech through the TV speaker.

DK610	DKTronics 3 Channel Sound Synthesizer	27.95
-------	---------------------------------------	-------

DN810	Alphacom 32 printer	49.95
-------	---------------------	-------

DN820	Paper for Alphacom 32 (Box of 5 rolls)	9.85
-------	--	------

PR700	Protek 1200 BAUD Acoustic Coupler	56.95
-------	-----------------------------------	-------

PR710	Spectrum Interface for PR700	18.85
-------	------------------------------	-------

An acoustic modem allowing communication between Spectrums or access to Prestel and other databases through the phone.

TC820	Technology Research Beta D Disk Drive I'face	88.60
-------	--	-------

Allows use of standard double density disk drives with access to up to 1.6 megabytes.

EL930	SP48 32k RAM upgrade for 16k Spectrum	27.00
-------	---------------------------------------	-------

No-solder kit for upgrading 16k Spectrums from Issue 2 onwards.

TF920	Transform Microdrive cartridge storage box	5.95
-------	--	------

DK950	DKTronics 56-way Extension cable	9.95
-------	----------------------------------	------

DK940	DKTronics Light Pen	15.95
-------	---------------------	-------

RB910	On/Off switch	4.95
-------	---------------	------

SC1020	48k Spectrum computer	95.95
--------	-----------------------	-------

SC1030	Spectrum Plus computer	125.95
--------	------------------------	--------

SC1040	ZX Microdrive	45.95
--------	---------------	-------

SC1050	ZX Interface 1	45.95
--------	----------------	-------



PHONE

**GUILDFORD (0483) 505605**

with your credit card number or fill in the coupon with a cheque or postal order payable to ELR International.

**OVERSEAS ORDERS ARE WELCOME. PLEASE ADD 10% OUTSIDE EUROPE.**

**WE ALSO SPECIALISE IN VOLUME EXPORT SALES. PLEASE ENQUIRE.**

## For A First Class Service

ELR International Ltd, St Nicholas House, The Mount, Guildford, Surrey GU2 5HN, England. Telex 859428 CONSOL G.



MasterCard.



PLEASE SEND ME THE FOLLOWING: STOCK NO. PRICE


I enclose cheque/P.O. made payable to  
ELR INTERNATIONAL LIMITED for:

Name My Credit Card No. is Address

# ELR INTERNATIONAL



# Sorting out a solution

Marcus Jeffery explains the various methods of solving computer problems

**Y**OU ARE a smuggler. A nameless East European country has discovered the delight of Clive's machines, and you have cornered the black market in Spectrums and QLs. Smuggling them out of the country presents a problem, however.

Each packing case measures  $3'6'' \times 3'6'' \times 3'6''$  as in figure one, and each Spectrum box measures  $1'6'' \times 1' \times 6''$ . The size of the QL boxes is  $2' \times 1' \times 6''$ . The profit on a Spectrum is £40, and on a QL, £70.

You want to make as much money as possible, but how do you fit the computers into the cases? Looking at the profits the QL would appear to be the best bet. The Spectrum computers are 75 percent of the volume of the

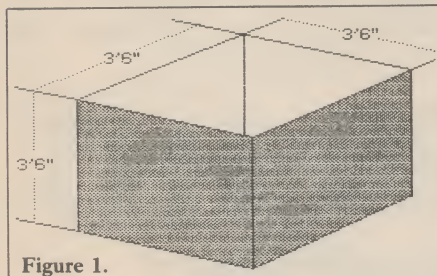


Figure 1.

QL, but only give about 57 percent of the profits.

Let us start by placing 21 QLs as in figure two, taking up  $3'6'' \times 3' \times 2'$ . We can add another seven QLs as shown in figure three, followed by six more down the sides – figure four – and finally four more in the corner to give figure five.

That gives a total of 38 QLs and a profit of £2660 per box. Not bad, but we can improve things by utilising the extra space. First of all, by removing one of the boxes marked 'X' in figure five we can fit in three Spectrums for a profit of £120 rather than £70. We can also fit a Spectrum in on top.

In addition, if we remove the top two boxes of the six which we fitted in figure four, then we can add a further six Spectrums. So, by removing three QLs and adding 10 Spectrums, our profit is now

$$(35 \times £70) + (10 \times £40) = £2850$$

Is this the best we can do? There is a little space left, but certainly not enough to fit another computer into, being only  $1'6'' \times 6'' \times 6''$ .

Consequently, we can be fairly sure of having the tightest fit possible, but what happens if we have lots of different box sizes? How do we work out the optimum fit for everything, other than by trial-and-error?

The only sure way would be to try every possible combination, starting with either a QL or Spectrum in one corner, then adding a computer next to it – in all possible orientations – and so on. This is going to take even the fastest of computers a while to solve.

So far, we have been looking at a fairly complex 3D approach. A 2D version of this is a common problem known as 'bin-packing'. The problem concerns a rectangle with a given width, but unlimited height. This is the bin, and the object of the exercise is to pack a number of smaller rectangles inside, in such a way that they have as small a height as possible.

Figure six shows how nine such rectangles might be fitted into a bin. The rectangles are in the form of a list – numbered one to nine – and they are

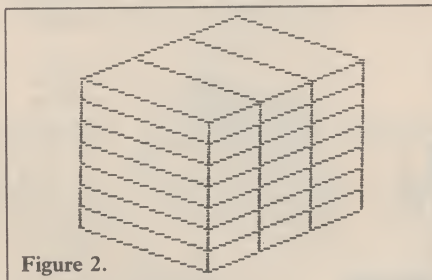


Figure 2.

placed into the bin as they occur in the list. Each time a rectangle is packed, it is placed as near to the bottom left-hand corner as possible. As can be seen from this example, the packing is not particularly efficient.

If the list of rectangles is ordered into decreasing height, as in figure seven, then the overall height is less.

Much research has discovered a bewildering variety of ordering for the list, and methods of placing the rec-



tangles. For instance, the 'bottom left' approach with a list ordered into decreasing height as taken in figure seven, will have a total height of three times the optimum height with the worst possible list of rectangles. Another method is 'non-increasing size'. In the example given, that would give an optimum result, but you can try a few methods out with your own data.

So, what's the use of it all? Apart from obvious applications, such as cutting shapes out of sheet metal, there is also a computer-related problem. Imagine that the width of the bin is a large computer's available memory, and the height is time. Each computer job can be viewed as a rectangle with the height and width being the time and memory required.

The bin-packing problem is now the problem of running a queue (list) of jobs (rectangles) in the shortest possible time (height). Of course, the computer could try all possible combinations of fitting the jobs into memory, as we suggested.

Unfortunately, assuming there are a reasonable number of jobs, the computer is likely to spend so much time calculating the optimum fit that it will never have time to run the jobs.

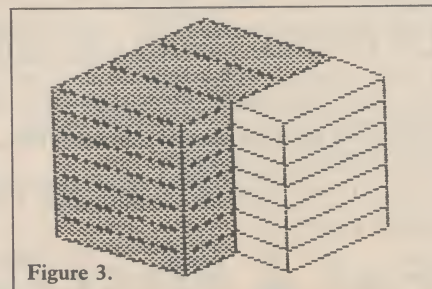


Figure 3.





## Problem Solving

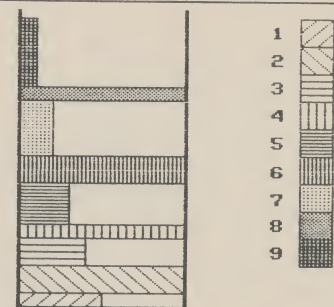


Figure 6. Unordered list of rectangles

worst possible way, then quicksort is no better than our original bubble sort method.

Although taking a different approach to a particular problem can often reduce the execution time, that is not always the case. There are usually 'fiddles' which you can use.

Take a look at the sliding block puzzle in figure 10. The idea is to slide the blocks, one at a time, swapping them with the single space, in order to move them into the target position. Figure ten shows the puzzle as it first appeared. See if you can solve it.

To show how this type of puzzle is tackled, we'll choose the slightly easier 8-Puzzle. This is shown in figure 11, where the target position should be all eight numbers in order around a space in the centre. The way to tackle this is to start building a game tree, similar to a family tree, with the branches growing downwards.

At each position, branches are grown to all the next possible positions, and so on. Eventually you'll reach the target position, and by working your way back through the branches, you can trace the necessary moves.

You could continue growing the tree indefinitely, and find lots of target positions, but the highest one will be the best solution.

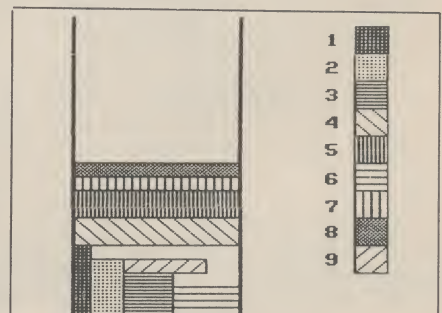


Figure 7. Rectangles in order of decreasing height. This gives optimum total height.

Even with only two to four branches from each position, the tree could be pretty large, and take a long time to search. Imagine how much worse it

*continued on page 64*

Illustration: Stephen Wright

Consequently, the scheduling problem is solved by initially sorting the list of jobs into a particular order.

We have seen how taking different approaches to problems can greatly affect the time it takes to complete a particular algorithm. The same applies to many problems, including general computer sorting techniques.

The most common sort routine, which the majority of people would implement due to its simplicity, is known as a 'bubble sort'. A pseudo-english algorithm for this would be something like

```
FOR last = N DOWNT0 2
FOR I = 1 TO last
IF Ith element > I+1th element,
then swap them
END I loop
END last loop
```

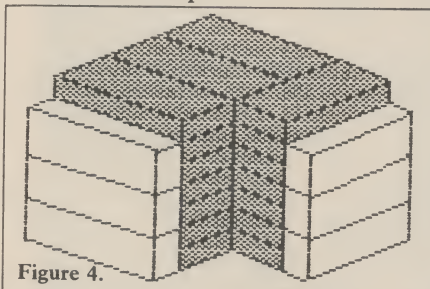


Figure 4.

where 'N' is the number of elements to be sorted. This routine can be seen working on the integers one to eight in figure eight. With each iteration, the largest number not yet placed filters through to its final position - black boxes.

This routine takes too long for large amounts of data. The approximate number of comparisons necessary is  $N^2$  (N times N). This is not strictly true, because the 'last' value of the

inner loop changes, but is close enough as a measure of the algorithm's efficiency. This figure is known as the 'order' of the algorithm. Since the 'order' has an exponential growth rate, this algorithm will take longer as the number of data elements grows.

By approaching the sorting problem

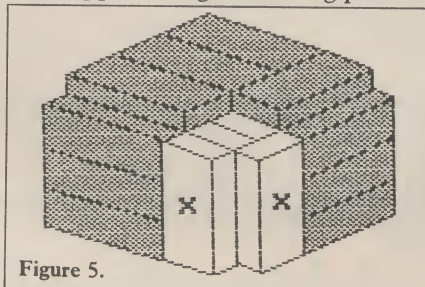


Figure 5.

with a completely different method, the time can be greatly improved. Mergesort works by splitting the elements to be sorted into two halves, of approximately equal length, which it then sorts separately, and finally 'merges' together.

Of course, each of those half lists can in turn be sorted using mergesort, by dividing them further, and so on. Figure nine gives a better indication of how this algorithm would deal with the list of numbers one to eight. Mergesort has the advantage of having an order of  $N \log_2 N$ , even if the data is ordered in the worst possible way.

There are numerous other sorting algorithms which can sometimes do better than mergesort, but the order of the mergesort cannot be beaten in the worst case. For example, a well-known sorting routine called quicksort tends to work marginally quicker than mergesort on random data. However, if the data is ordered in the



# Problem Solving

continued from page 63

would be if we applied the same method to such games as draughts and chess. Consequently, we use what are known as heuristics. Those are scores which we assign to each position to

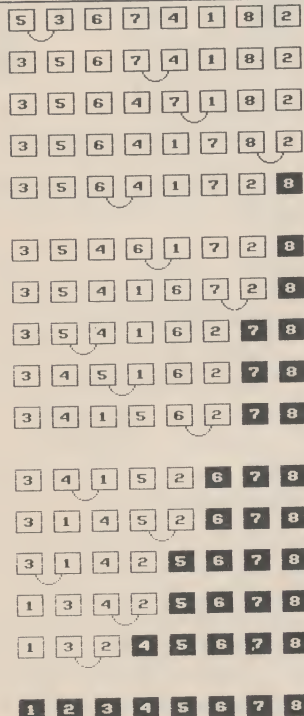


Figure 8. Bubble sort.

decide how near to the target we are.

With the sliding block puzzles, we might use the Manhattan Distances. We take the number of vertical and horizontal places of each square from its final location, and add them together. That evaluation is then assigned to the position, and the positions with the best evaluations are always considered first. The Manhat-

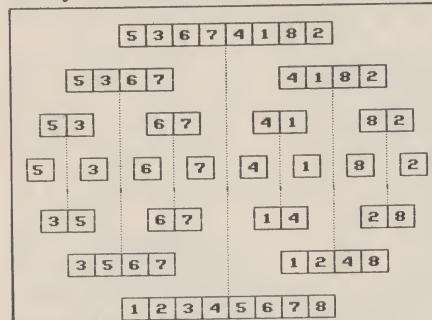


Figure 9. Mergesort

tan Distance evaluation is not necessarily the best, but it does at least give some indication of which positions are likely to be best.

The examples in this article give some indication of the variety of methods with which many common computer problems can be solved. If a program seems to be taking too long, then take another look at it. Changing

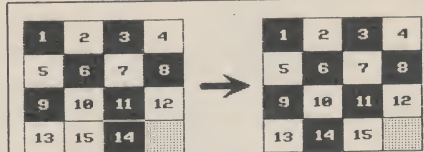


Figure 10.

the data structure or approach may greatly improve matters.

Unfortunately, not every problem can be solved quite so easily. Though game trees, such as the one above, are used in computer chess playing, it's going to be quite a while before we have a perfect chess machine. Over thirty years ago, C Shannon pointed out that there are something like  $10^{120}$  possible chess games of 40 moves – the average length of a game. This figure is larger than the number of atoms in the universe.

By the way. The sliding block problem in figure 10 is impossible.

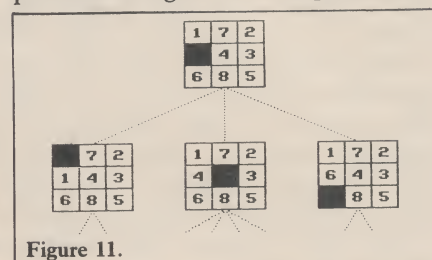


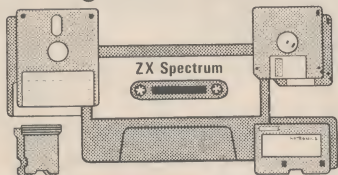
Figure 11.

## ROMANTIC ROBOT present

### New! TRANS-EXPRESS 85.2

The only fully automatic and professional utility for transferring Spectrum programs from:

- ① CARTRIDGE to CARTRIDGE or DISC to DISC or WAFER to WAFER
- ② TAPE to CARTRIDGE or DISC or WAFER
- ③ CARTRIDGE to TAPE



"An ingenious piece of software." PCN

"..... Features ..... Performance" Sinclair User

"A valuable utility for microdrive users." PCN

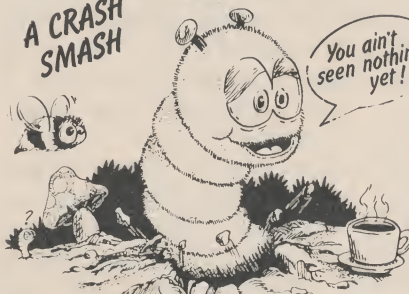
"HIGHLY RECOMMENDED!" Sinclair User

NEW! Part ② now fully automatic – you just START/STOP the tape-transfers, modifies, relocates, re-structures & helps to RUN also hyper/turbo, headerless, extra-long (including 48K) parts, etc.

The best possible success ratio, the easiest & fastest in use.

### Wriggler

A CRASH SMASH

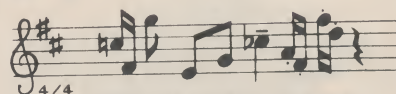


A novelty maze arcade game. Superb graphics and action. An extensive map, over 250 locations, full of features and creatures unseen as yet. New, funny, addictive, compelling.

Plus a bonus on side B: 'A WINNER.' PCWeekly

THE MOONS OF JUPITER

### New! MUSIC TYPEWRITER 85



COMPLETE MUSIC SYSTEM FOR THE ZX SPECTRUM

"A very professional piece of programming, easy to use, excellent screen presentation, error trapping and helpful prompts." ZX Computing

"Extremely user friendly, lets you get started within minutes." Crash

"The notation has to be seen to be believed." Your Spectrum

"Puts many expensive professional systems to shame." The Listener

"Excellent aid to teaching the basics of music." Which Micro? "Great fun" The Listener

"If you are interested in music and own a computer then get it." ZX Computing

NEW! Sheet music quality printout on dot matrix printers. NEW!

Microdrive compatible

NEW SUPPLEMENT for £4.95 – DATA CONVERTER to use music in your own programs. MICRODRIVER puts MT onto m'drives. NEW!

Please send SAE for details. (European orders please add £1 overseas £2)

I enclose a cheque/PO for £..... or debit my ☐ No ☐

Name..... Card expiry.....

Address.....

Signature..... Date.....

Trade enquiries welcome.

Deliveries normally by return.

Please send me (tick as applicable) WRIGGLER £ 5.95 ☐

MUSIC TYPEWRITER £ 9.95 ☐ MT Supplement £ 4.95 ☐

TRANS-EXPRESS:

all parts on tape £ 9.95 ☐ or cartridge £ 14.95 ☐

①+② on tape £ 7.50 ☐ or Rotronics wafer £ 12.95 ☐

Updates of TRANS-EXPRESS or MUSIC TYPEWRITER £ 3.50 ☐

TRANS-EXPRESS upgrades from tape to cartridge £ 6.95 ☐

ROMANTIC ROBOT 77 Dyne Road London NW6 7DR

24 hrs ☐ orders 01-625 9463 ☐ SU



·JONAH·  
·BARRINGTON'S·

FEATURING  
*Reprosound*

# SQUASH



**A**ll the speed and excitement of championship squash is now available at your fingertips in a game so realistic – you'll need a shower afterwards!

Written with the help of Jonah Barrington, former World Squash Champion, the game keeps to the International Squash Racquet Federation rules as far as is possible. You serve in a 3D glass-backed court to play against your computer, or, using the game's two player option you can challenge a friend.

There are 4 levels of difficulty, and depending how fit you are you can play 1, 3 or 5 game matches! Check your score with the on screen display, but as your eyes are too busy watching the ball, Jonah Barrington acting as marker calls out the score for you. All this is due to a programming breakthrough that enables your computer to accurately reproduce the human voice without any hardware add-ons!

The game also incorporates a User Defined Joystick/Keys option which means that you can set your keyboard to suit you, or play with just about any make of joystick.

So get in training for this high-powered action game now.

It's your service next!

**FOR**

Commodore 64  
and all  
48K Spectrums  
£7.95

**New  
Generation  
Software**



FREEPOST, Bath BA2 4TD. Tel: 0225 316924

New Generation products are sold according to their terms of trade and conditions of sale.



# BEYOND

CHALLENGING SOFTWARE

THE FIRST ADVENTURE GAME WITHOUT TEXT!

YOU ISSUE  
COMMANDS THROUGH  
JOYSTICK  
KEYBOARD  
OR LIGHT PEN

AMBASSADOR KRYX IS HELD CAPTIVE  
ABOARD GENERAL ZOFF'S STARSHIP  
YOU HAVE SIX FUTURE HEROES AND  
100 MINUTES OF REAL TIME TO RESCUE HIM  
GASP AT THE RELENTLESS PACE

THRILL  
TO THE  
GRAPHICS  
BE INSPIRED  
BY THE  
MUSIC ON THE  
COMMODORE 64



# SHADOWFIRE

SHADOWFIRE IS AVAILABLE NOW FROM BETTER  
SOFTWARE DEALERS EVERYWHERE  
MAIL ORDER: BEYOND COMPETITION HOUSE  
FARNDON ROAD, MARKET HARBOUROUGH  
LEICESTERSHIRE LE16 9NR PRICE £9.95

FOR  
SPECTRUM 48K  
& COMMODORE 64

INCLUDING P&P ACCESS & BARCLAYCARD RING 0858 34567 CHEQUES & P/Os MADE PAYABLE TO BEYOND





Michael Diamond

# Computing for the kibbutz

Meet the Israelis with a Spectrum way of life. Michael Diamond is your guide

**K**IBBUTZ Kfar Hanassi, next to the Jordan River, overlooking the Golan Heights, is a community of 250 families which produces a variety of products for the agricultural market as well as for industry.

The agricultural involvement of the kibbutz covers cotton, apples, citrus, avocados, chicken and sheep, while among the things produced for industry are stainless steel ball valves, of such high quality that they are used in nuclear installations worldwide, and cast aluminium irrigation equipment for other farming communities in Israel.

Given the diversity of operations, together with the fact that the domestic life of the community must also be catered for, it is scarcely surprising that computers play a large role in the life of the kibbutznik. Many of those computers are Spectrums.

"We have an IBM for record keeping, inventory control, and so on," says Michael Doari, farm manager. "However, this machine is in use 24 hours a day in the factory. The Spectrum is ideal for the on-site applications."

At the moment there are about 12 Spectrums on the kibbutz. Those are owned mainly by households, but since the individual's private life and work are so closely related on a kibbutz most owners of those machines are using them in their jobs.

Phyllis Collett is a midwife who, when she is not delivering babies, works in the laundry, washing and drying the clothes for the 500 people on the kibbutz. Phyllis used her Spectrum initially as a word processor for preparing questionnaires, information sheets – in English and Hebrew – and all the paperwork that is required in her occupation as midwife.

She soon obtained a program to record her weekly, monthly and yearly wash loads. "We must know how much washing powder we are using,

how many hours of labour are going into the job, how many maintenance hours and the quantities of different sorts of 'wash," she explains. "Altogether we have over 50 categories which must be recorded.

"I considered using a spreadsheet program originally but I decided that a specialised program would be more appropriate. I found a member on the kibbutz who could write in Basic and I soon had the laundry record-keeping fully computerised.

"The next project is to translate the program into Hebrew so that it can be distributed to other kibbutzim. We already have a Hebrew character set. All we need do is a simple exchange of characters, taking into account that

number of photographs, I need to keep more than one file. I have the program and files on microdrive so it doesn't take too long to find what I'm looking for."

Johnny Harmatz is in charge of chicken production. Each year he takes delivery of at least four flocks. They come in as one day old chicks and are kept until they are about seven or eight weeks old. Their living conditions must be carefully controlled – even a one degree change in temperature can have a dramatic effect on the birds.

"When you have 65,000 chickens in one building it is very important to monitor every aspect of their existence," says Johnny. "It is important to

*continued on page 69*



Johnny Harmatz counts his chickens

Hebrew runs from right to left."

Phyllis' husband Dov also uses the computer. He is a photographer. "The kibbutz was established 37 years ago, in the same year of the state of Israel. Since that time a pictorial record has been kept of all developments. We have come a long way since the days when we used to live in tents and shift stones with our bare hands," says Dov. "Many, many photographs have been taken and somebody has to keep track of where they can be found. I use **Vu-File** for this but, due to the



Michael gets a better view of the kibbutz





Announcing the

# MIRAGE MICRODRIVER



At the touch of a button you can transfer *all* your programs onto Microdrive cartridge.

At last the full potential and speed of the ZX Microdrives can be realised by all 48K Spectrum and Spectrum+ owners, for only £39.95.

## Features:

- ★ Transfer *any* program onto Microdrive cartridge.
- ★ Freeze *any* game at *any* point, save it, and restore it later.
- ★ Use the "POKE" facility to give yourself infinite lives etc.

The Mirage Microdriver consists of a RAM PACK style case which simply plugs onto the rear of the ZX Interface 1. An expansion connector is provided for the connection of other peripherals. The software has been designed to be easy to use and is menu driven. It resides on a 4K ROM contained within the Microdriver so there is no fussing with tapes to get it to run. All you need to do is press the button on the side.

**Note:** This unit is intended for software owners to transfer their own programs onto microdrive cartridges for speed and ease of access. Programs saved using the Mirage Microdriver are *unreadable* unless the Microdriver is present.

## How to Order

Send a cheque for £44.95, including £5 for postage and packing, to the address below, or use your Access or Visa card by telephoning (0736) 48321 to place your order immediately.

Please allow 28 days for delivery.



24 Bank Street,  
Braintree,  
Essex CM7 7UL  
Tel: (0376) 48321

**MICRO-EXPORT**

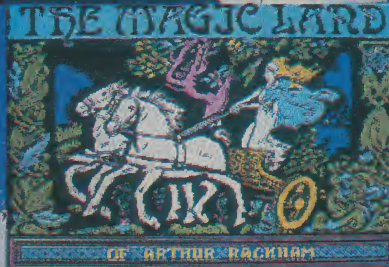
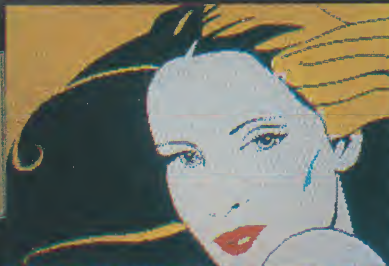
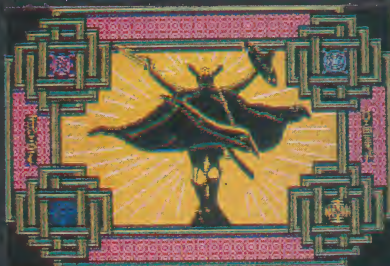
SINCLAIR  
ACORN, MSX, ATARI, ETC

**We export Microcomputers  
and Peripherals to all Countries  
Any make. Any Quantities  
BIG DISCOUNTS**

send for comprehensive price list to:  
Dept CC  
MICRO-X LTD  
765-767 HARROW ROAD, LONDON NW10 5NY  
TELEPHONE 01-968 6622 TELEX 915866 MICROX G.

48K SPECTRUM  
INCLUDES PROGRAM, DEMO,  
AND PRINT'N PLOTTER  
100 PAGE PICTURE BOOK

# Paint Plus and Designed to make superb graphics simple.





continued from page 67

analyse what difference it makes to the flock if we make a minor change.

"Perhaps we have a flock which is not gaining weight as it should. It may be that we have to alter the feed so that it contains more proteins or amino acids. It may be that the temperature in the building is too low, or the birds are too densely packed together. What happens if the price of chicken feed increases? We have to calculate the costs involved and the difference it will make to the profit. A spreadsheet program is perfect for analysing the effect of change.

"At the moment we are using **Vu-Calc** but it is limited with only 60\*60 cells. Ideally we need a larger computer, but the Spectrum does the job efficiently." The next step is to get a statistical analysis package which will give a graphics illustration of the relationships between the figures.

"Software here is a bit thin on the ground," adds Johnny. "I scour the English computer magazines for information, but with a new flock about to arrive I have very little time to experiment." With this Johnny runs off to deal with yet another

emergency.

The Spectrum has made its mark also in education on the kibbutz. The local high school has a network of 15 Spectrums. "The advantages of the network are enormous," says Yoram Fisher, the teacher in charge of the computer room. "We have to buy only one or two printers and a couple of microdrives and anybody on the network can operate the peripherals.

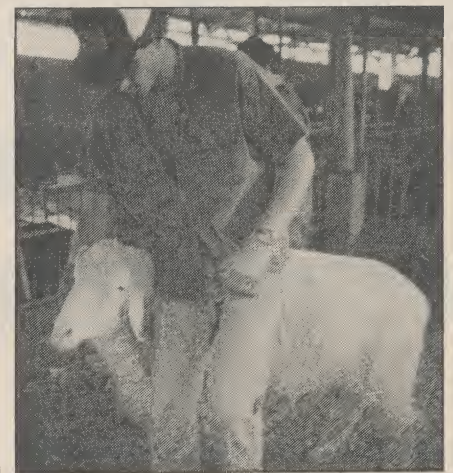
"Even the teachers in the English classes have noted an improvement in the performance of the children. It doesn't seem to matter whether they program or just play games, they must still read the instructions. We have one boy of 15 who has just completed a machine code version of Othello. It is more than a match for the Sinclair version."

A kibbutz is an ideal place to set up a network as all the houses are close together and there is no difficulty in leading wires from one to another. Kfar Hanassi intends to set up a fully operative network shortly, once there are more Spectrums to link up.

Meanwhile a large market has developed in Israel for programs in Hebrew. Each child on Kfar Hanassi

who owns a Spectrum has a translation of the manual along with introductory programs. The programs were written by one of the teachers at the high school and the book is published by the importers of the Spectrum.

At the moment only **Vu-Calc** is available in Hebrew along with a reasonable word processor but the Israel market has still to see a good database package in Hebrew or even an adventure game. The market is crying out for Hebrew software.



Sheep-shearing time at Kfar Hanassi

# and Screen Machine.

If you're a 48K Spectrum owner, **PAINTPLUS** and **SCREEN MACHINE** can transform your graphics expertise in seconds! Just take a look at some of the things that are possible with a little practice!

YES they were all produced on a ZX Spectrum with no modification and using **PAINTPLUS** and **SCREEN MACHINE**.

These two packages are incredible... **PAINTPLUS** is a complete upgrade of our previous program **Print'n'Plotter Paintbox** but with more than 24 new commands and facilities to give you every possible graphic tool.

Some of the new commands are **BOX DRAW**, **ENLARGE TO EDIT**, **PAPER WASH MODE**, **UDG GRABBING FROM SCREEN**, **AUTOMATIC MULTIPLE SCREEN FILES** AND **UDG BANKS ORGANISER** AND **PAINT ROUTINES** IN 5 PATTERNS AVAILABLE IN BOTH NORMAL AND OVER MODE!

**SCREEN MACHINE** allows you to take the results from **PAINTPLUS** and manipulate to save memory, recolour, enlarge and reduce, flip and relocate etc.

There's even a complete compiler for text!

Both programs now come with a copy of our 100 page colour book: **PRINT'N'PLOTTER PICTURE BOOK** and of course a fantastic Demo on side two of the cassette.

Everything is completely Microdrive compatible and easy to transfer to cartridge.

So if you want to produce superb graphics on your 48K Spectrum and you want to do it simply... simply send for a copy of **PAINTPLUS** and **SCREEN MACHINE** today or ask at your local computer shop.

Now with 100 page  
**Print'n'Plotter Picture Book**  
Full of Hints, Tips,  
Programs, Instructions  
and Colour Illustrations!

**Print'n'Plotter  
Products**



**Send today or ask your local Computer Shop**

Post to: Dept SUPrint'n'Plotter Products Ltd, 19 Borough High Street, London SE1 9SE  
(Credit Card order telephone 01-660 7231 other enquiries 01-403 3622)

Name \_\_\_\_\_

Address \_\_\_\_\_

I enclose remittance in full  
Please bill my Access/Visa/Mastercard Number

Please send me the following:

- ☐ **PAINTPLUS** at £9.95
- ☐ **SCREEN MACHINE** at £8.25
- ☐ **ADVENTURE PLANNER** at £4.50
- ☐ **ZX SPECTRUM JOTTER PAD** at £9.00
- ☐ **ZX PRINTER PAPER 5 ROLLS** at £12.00
- ☐ **10 ROLLS** at £23.00

All prices include VAT and carriage for the U.K.  
Overseas orders add 20% for additional handling (surface rates)



### Are you taking your Spectrum seriously?



**£79.95**

INCLUSIVE

The Transform Keyboard transforms your Spectrum into a fully operational professional machine.

- Will incorporate micro-drive interface and power supply
- 60 keys including fullsize space bar
- Large ENTER key
- Full stop, comma, semi-colon, colon, single delete and edit keys
- On/off switch with LED
- Easy installation – no soldering required
- Black anodised case
- Now with 3 colour printed key tops
- EMODE key

*"Its price of £69.95 reflects the kind of use to which it will be put but it is certainly the top keyboard at the moment."*

SINCLAIR USER JUNE 1984

## Business Software

### Business Bank Account £10.75

This program will enable you to enter debits under 17 different subheadings. Statements include totals of all subheadings.

### Sales Day Book £10.75

For all your invoices, this program will enable you to prepare statements of outstanding invoices. Program will also calculate VAT.

### Purchase Day Book £10.75

Keeps a complete record of all your purchases under 17 different subheadings. This program also calculates VAT.

### Business Pack £25.00

Including all the above programs.

### Stock Control £10.75

Handles 900 lines, including details of supplier. Program has full search facilities enabling you to search and update all lines from one supplier.

### Invoicing £15.00

This program will print out invoices, calculates discounts and VAT. The program will calculate totals from unit prices. Up to 50 accounts with 250 outstanding invoices.

### Word Processing by Tasman £13.90

Tasword Two is a powerful word processing program that will perform all the functions available on large processors. The program will give you 64 characters per line on screen.

### Masterfile by Campbell Systems £15.00

This is one of the best database programs available for the ZX Spectrum. This program has many uses in a small business.

### Dlan by Campbell Systems £7.95

Use your Spectrum to sell your products. Dlan will display messages in up to 11 different typefaces. Will scroll text in any direction.

### 64 Column Generator by Tasman £5.50

You can use this program within your other programs to display 64 columns on screen.

### Payroll by Byte One £19.95

This payroll program will handle up to 40 employees and will calculate NIC, PAYE, superannuation and many other deductions. This is a very user friendly program and extremely good value.

## NEW

### Sales/Purchase Ledger Invoicing £25.00

This program is for use on micro-drive only. The program will print an invoice using a built-in price list and post the invoice to your customer's account. Will also print price lists, statements, labels etc.

### Tasmerge £10.95

Allows you to transfer data from Masterfile into Tasword enabling you to use Tasword for mail merge. The program allows you to specify line and column of each field. For use on micro-drive only.

### Superfile £14.95

This is a new database program that stores pages of text 64 columns x 22 rows. The program includes word processing and full search facilities.

### Omnicalc 2 £14.95

This is the long-awaited micro-drive version of omnicalc complete with histograms and many other features.

### Projector 1 £13.90

Business graphics program that will help you present your cashflow, sales expenditure in many different ways including pie line, and histogram charts.

### Tasprint £9.90

Use this program with Tasword Two to produce 5 different fonts on a dot matrix printer.

### MF-Print £6.95

Enables you to set a print format for your full-size printer within masterfile. Supplied complete with masterfile for £19.95.

### Trans Express £9.95

Micro-drive utility program which will enable you to backup all your micro-drive cartridges.

### Now in stock

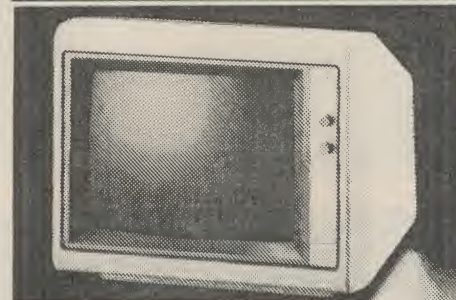
Blank micro-drive cartridges ..... £4.95  
Continuous paper ..... £12.99  
Printer ribbons from ..... £3.50

## QL

Centronics Interface ..... £39.95  
QL Dust Cover ..... £5.00

Transform can supply a wide range of printers, monitors, and leads for the QL. For further details send S.A.E.

## Monitors



It is possible to connect your Spectrum to both Black/Green and composite Video monitors using high resolution monitors are particularly useful with programs like Tasword that use 64 columns. We supply complete instructions on how to connect monitors to both Issue Two and Issue Three Spectrums. These monitors can also be connected to your QL.

Phillips black and green ..... £75.00  
Kaga/Taxan black and green ..... £99.95  
Sanyo Med res for QL ..... £273.60

## Printers

All the software we supply runs on full-size printers (unless you are using interface 1) you will require an interface to connect your Spectrum to a printer, the interface we supply uses the graphics characters to set printer codes as in Tasword and prints a double size screen dump.

Centronics/RS232 Interface ..... £45.00

### Dot matrix printers

Brother HR5 ..... £132.00  
Brother M1009 ..... £163.00  
Star Gemini 10x ..... £199.00  
Epson RX80 FT ..... £229.00  
Epson FX80 ..... £324.00

### Daisywheel printers

Smith-Corona TP I ..... £189.00  
Silver Reed EXP500 ..... £284.00  
Brother HR15 ..... £349.44

Please add £5.00 delivery plus VAT to the price of printers and monitors. All software prices include VAT, post and packing.



TRANSFORM LTD (Dept. SU)

01-658 6350

24, West Oak, Beckenham, Kent BR3 2EZ





## Business Software

### Survey II

ANALYSING survey results is not easy and a computer of some sort is usually pressed into service. Now, with **Survey II** from Lobos Software, available from Microworkshops, your humble Spectrum or 16K ZX81 can be used to do the job.

**Survey II** is designed to analyse those surveys with up to six possible answers to each question, and where only one of such answers is valid. Up to 2500 10-question questionnaires can be dealt with on the 48K Spectrum.

No allowance is made for storing data on microdrives. The program is designed to drive a ZX printer or a full-sized printer with ZX Lprint III interface. The manual states that by altering the program other interfaces can also be used, although I could not get the Tasman interface to work.

The most horrendous part of any analyses program is entering the data, and **Survey II** is no exception. When starting on a new survey the number of questionnaires, the number of questions, and the number of possible responses to each question are entered. If you try to define more data than the program can cope with you are politely told so, and offered the chance to buy, for a further £10.00 a version which will handle up to 3000 questionnaires of 10 questions but with fewer error traps.

The data can then be entered as a string of numbers. A flashing figure at the top of the screen indicates which case number the data is for. If too many, or too few, figures are entered the data is rejected and must be re-entered.



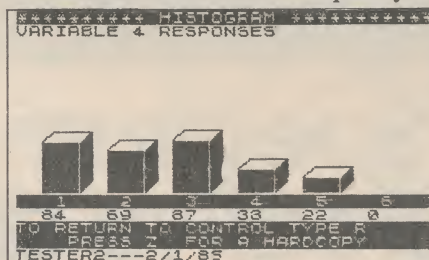
Illustration: Stephen Wright

The program checks for data outside the specified range. Unanswered questions are coded with a '9'. The tedium of data entry can be banished to some extent by providing a SAVE option which allows partially entered data to be saved together with the program.

Once the data has been entered it is displayed on the screen and you are given an opportunity to change incorrect data. That can be done at any stage within the program.

**Survey II** provides two analysis options. The first displays the frequency of different responses to questions; the percentage and cumulative percent are shown also. The results can be displayed as a 3D histogram.

The second shows the frequency of



combinations of responses to two questions – crosstabulation, a statistic showing the likelihood of the results occurring by chance can also be obtained.

A full printout of all the data, frequency and crosstabulation charts can be obtained if you have the time. With the sample provided, with 300 cases of six questions, it took over half an hour to printout.

Considering the slowness with which frequencies, for even a medium-sized sample, are calculated the screen display is uninformative. That, and the fact that program and data cannot be saved to microdrive, are my only criticisms. Otherwise **Survey II** is a solid program which is well protected against accidental crashes.

Mike Wright

**Publisher** Lobos Software, 10 Randall Place, Bradford, W. Yorkshire, BD9 4AE. Available from Microworkshops, 1 Park Lane, Baildon, Shipley, West Yorkshire, BD17 7LQ.

**Memory** any Spectrum, 16K ZX-81  
**Price** £10.00

★★★

### Bizzicom

WHEN a program like **Bizzicom** from Merlin Software, which relies solely on tape storage of data and a ZX type printer, is released there is an immediate feeling of disappointment.

**Bizzicom** consists of two programs; the first Bizzicom-1, is a stock control system, while the second, Bizzicom-2, provides business analyses from the data prepared by the first. Both sides of the tape have the same label making it difficult to differentiate between the two programs.

The manual is strong on what the programs are capable of doing but

weak on giving any explanation or guidance, preferring instead to rely on what used to be described as user friendliness and the user's innate intelligence.

Bizzicom-1 caters for up to 390 different stock items. Each is defined by a six character code, the first two of which are used to link similar items into groups. A 14 character description is also available to expand on the code.

For new entries the average cost price, the selling price and details of the cost price and quantity of any order are entered along with the stock level. Those details, together with the dates of the last receipt, issue, order

and menu of further options, are also displayed when changes need to be made to the date.

The screen displays and the method of data entry have been well thought out and it is a pity that they are spoilt by the rest of the program. It has been fairly well protected from crashing when entering data, although still susceptible to CAPS SHIFT and SPACE. However, I found that it crashed regularly with the 'Interger out of range' message, despite there being no obvious flaw in any of the data entered.

Similar problems occurred with Bizzicom-2. At first it crashed when I

continued on page 72



## Business Software

continued from page 71

tried to load the amended transaction files saved from Bizzicom-1. So I tried the sample files provided, or I would have done if they had been there.

Finally, I loaded Bizzicom-1 and saved the transaction files without any amendments. The result was the same, the program crashed with the report '3 Subscript wrong'.

Bizzicom-2 is supposed to produce financial reports, including VAT payable and recoverable, from the sales and purchases of the stock control program. Since most businesses can reclaim VAT from items other than those bought for resale the VAT recoverable report is likely to be understated.

Although the program is of no practical use in its present form, the screen layout and prompting in the first part could, with a lot of work, form the basis for a promising program.

Mike Wright.

**Publisher** Merlin Software, Business & Technology Centre, Bessemer Drive, Stevenage, Hertfordshire SG1 2DX  
**Memory** 48K **Price** £14.95

★

## Statistics II

STAR GAZERS might be familiar with Bridge Software, publishers of the much acclaimed **Night Sky** program. Also included in the range is **Statistics I**, which consists of two programs. The first produces simple statistics for data arranged in groups. The second performs analyses of data in pairs.

There are four main options for the grouped data program. Those allow data entry and deletion, summary statistics, uncorrelated test and analyses of variance.

Data entry is relatively easy, with each group of data given a name before the data is entered. Up to 10 groups can be used at a time. The last piece of data entered is shown on the screen, and can be corrected at any time until the next piece of data has been entered, or data entry abandoned.

In what is a major omission there is no opportunity to list, examine or alter data once past that point, although it is possible to delete a whole group of data if something is wrong.

The three statistical options all produce analyses quickly but lack the sophistication of other programs. Statistical tables are still required to look up the results. The screen layout gives the results in a straightforward, no frills, manner.

The program would not include all 10 groups in the analyses of variance, despite it shown as a possibility.

In the paired data only one set can be entered at a time. Entering a new data name automatically overwrites the old set. The same criticism applies to seeing and correcting data in the grouped data program also applies.

The manual claims that the program is crash proof. On occasion, however, extra large numbers or a mixture of numbers and text both stopped the program.

The claims for user friendly programs are over-exaggerated, but as the programs do not do a great deal they cannot help but be user friendly.

Mike Wright

**Publisher** Bridge software, 36 Fernwood, Marple Bridge, Stockport, Cheshire SK6 5BE.  
**Memory** 16K **Price** £6.90

★

# TRANSFORM LTD. Computer Accessories

## ZX Spectrum and QL Microdrive Storage Box

- Designed to match QL and Spectrum
- Holds 20 cartridges and index cards
- Fully interlocking

### Spectrum and QL

QL Centronics Interface	£29.95
QL Dust Cover	£5.00
QL RS 232 Lead	£10.00
QL Monitor	£299.00
Spectrum monochrome monitor connector	£11.50
Spectrum '+' Dust Cover	£4.00
Microdrive Cartridges	£1.99
Spectrum R.G.B. Connector	£45.00
<b>Spectrum repairs</b>	<b>£18.95</b>

• We also supply printers, monitors, labels, ribbon and listing paper.

**£5.95**

Available from selected WH Smith's and leading computer shops



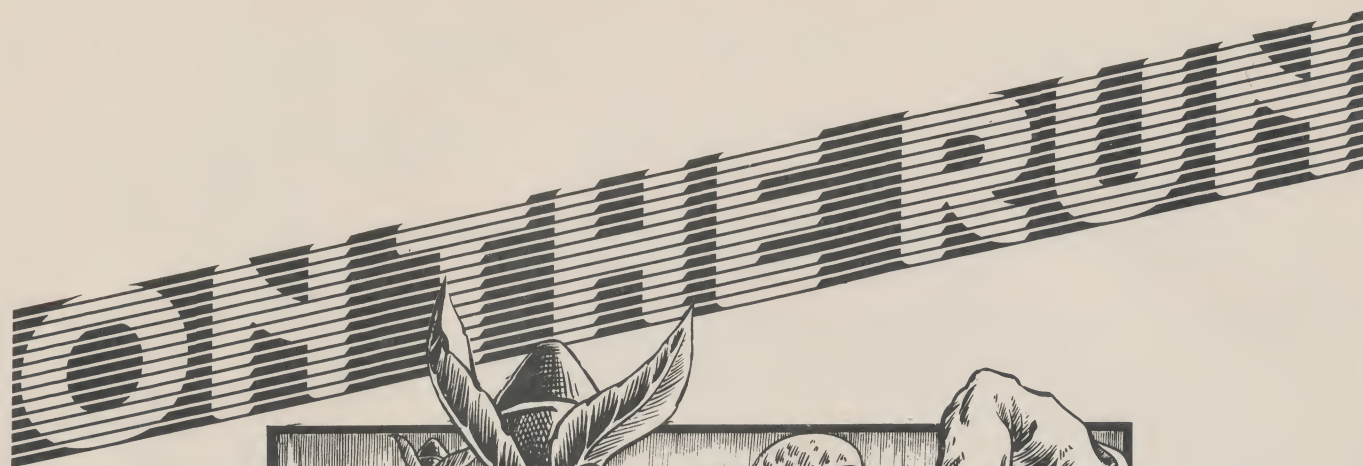
**TRANSFORM LTD. (Dept. SU)**

**089 283 4783**



**'Swatlands', Lucks Lane, Paddock Wood, Kent TN12 6QL.**





**SPECTRUM 48K £6.90**

Selected Design Design titles are available from:-

**Boots** **WOOLWORTH** **John Menzies**  
**COMET** WHSMITH

and all leading software stockists, or direct from:-

**Design Design**

Design Design Software,  
 125 Smedley Road, Cheetham Hill, Manchester M8 7RS

**Trade enquiries:- 061 205 6603**

Price includes p & p



# Now YOU can fly with the legendary Red Arrows – in the most challenging flight simulation ever!

It's the most exciting flight simulator ever written for a home computer – the product of many months of dedicated work by some of Britain's top programmers, enthusiastically aided by the talents of aircraft designers,

## Be a VIP visitor with the Red Arrows!

Everyone who buys a Red Arrows computer program will be invited to enter an exciting competition. The winners will be given a VIP visit to the Red Arrows base at RAF Scampton, the wartime home of the Dambusters. Your visit will include two nights' accommodation at a luxury hotel. And while you are at Scampton you will be invited to sit at the controls of a Hawk. There will even be a flypast of the Red Arrows in your honour!

Now on sale at:

**BOOTS COMET Currys Dixons**  
**Greens John Menzies RUMBELOWS spectrum**  
**WHSMITH** and other leading computer stores

## ORDER FORM

	Tape (£8.95)	5¼" Disc (£11.95)	3" Disc (£12.95)	3½" Disc (£12.95)
Amstrad .....	<input type="checkbox"/>	N/A	<input type="checkbox"/>	N/A
Atari .....	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A
BBC B .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Comm. 64 .....	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A
Electron .....	<input type="checkbox"/>	N/A	N/A	<input type="checkbox"/>
Spectrum .....	<input type="checkbox"/>	N/A	N/A	<input type="checkbox"/>

I wish to pay by:

☐ Access/Mastercard/Eurocard, No.

\_\_\_\_\_

☐ Barclaycard/Visa No.

\_\_\_\_\_

☐ Cheque/PO made payable to Database Publications Ltd.

Name \_\_\_\_\_

Address \_\_\_\_\_

Signed \_\_\_\_\_

Send to: Database Software, FREEPOST, Europa House,  
 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

YOU CAN ALSO  
 ORDER BY PHONE:

061-480 0173  
 (24 hours)

Don't forget to quote your credit  
 card number and full address.

engineers, mathematicians – and the Red Arrow pilots themselves.

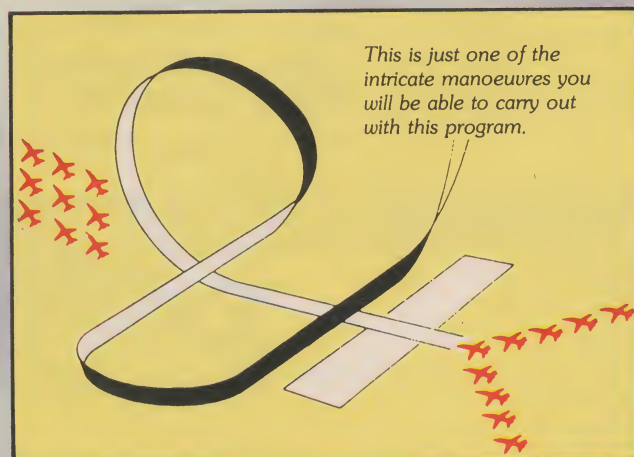
Every ounce of power contained in the micro, and its enhanced sound and graphics capabilities, is used to give the utmost realism to re-creating the most spectacular aeronautical displays ever seen in the skies of Britain.

You start by practising take offs and landings. Then, once you have won your wings, you fly in formation as part of the Red Arrows team. There's no margin for error as you fly a mere six to 10 feet from each other – at speeds of between 300 and 350 miles an hour!

But the real drama begins as you plunge into the death-defying manoeuvres that have been thrilling crowds at air shows for the last 21 years.

On the panel in front of you are all the instruments you need – plus a screen giving you an external view of the complete formation you are flying. Slip out of line for a second and the eagle-eyed Red Leader will be on the radio ordering you back into position.

The program comes with a detailed flight handbook that will soon give you the confidence to take YOUR place alongside the ace pilots of the Red Arrows, even if you've never flown before!



Put yourself in the pilot's seat of the most manoeuvrable fighter in the RAF!



# RED ARROWS

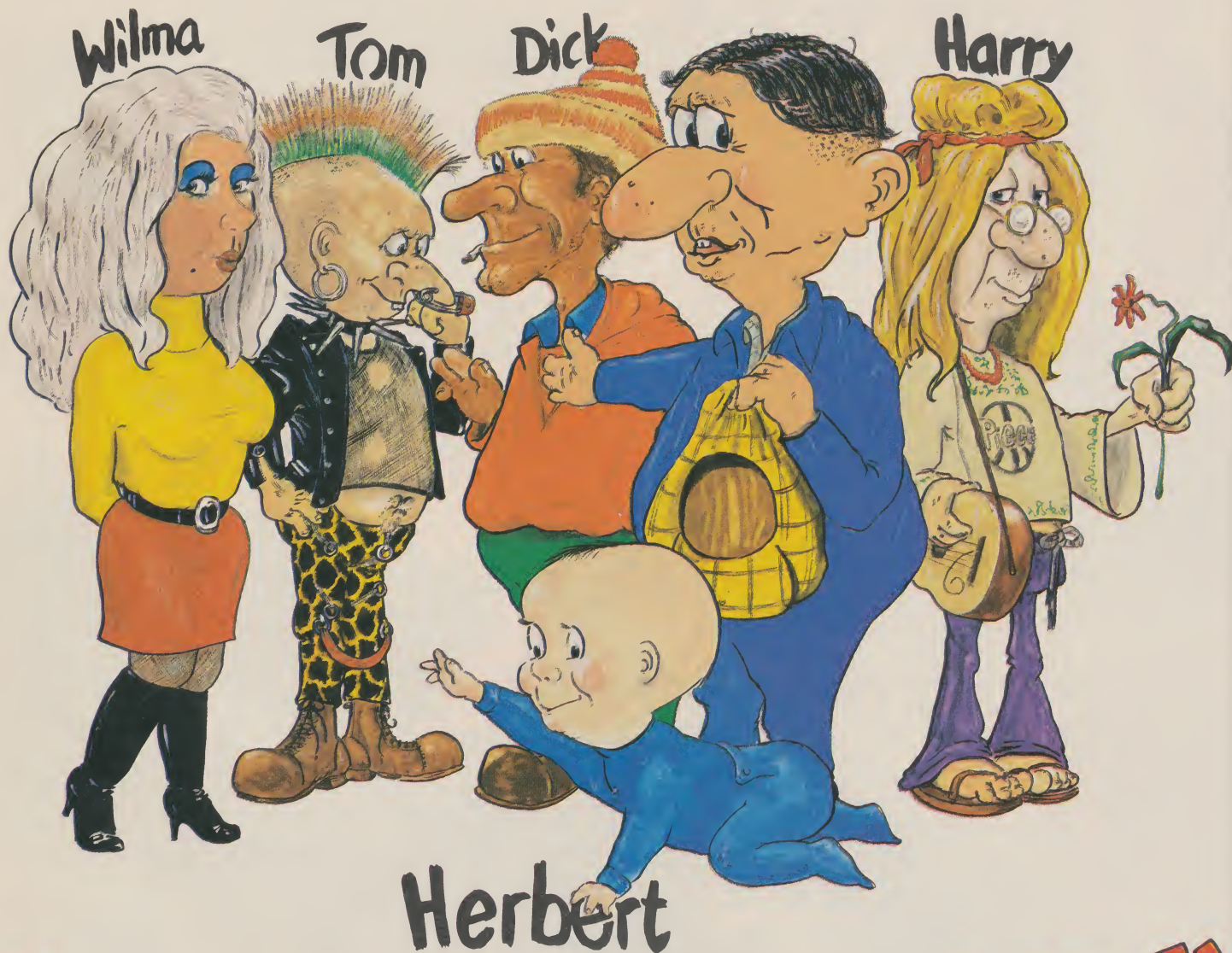


A gripping, realistic  
computer simulation  
for the

Commodore  
Spectrum  
Amstrad  
Electron  
BBC Micro  
Atari



# Meet the Gang!



## "Everyone's a Wally"

**1**ST EVER MULTI-ROLE ARCADE ADVENTURE

Spectrum 48K £9.95

Commodore 64 £9.95

Amstrad CPC 464 £9.95



## MIKRO-GEN

44 The Broadway, Bracknell, Berks. 0344 427317

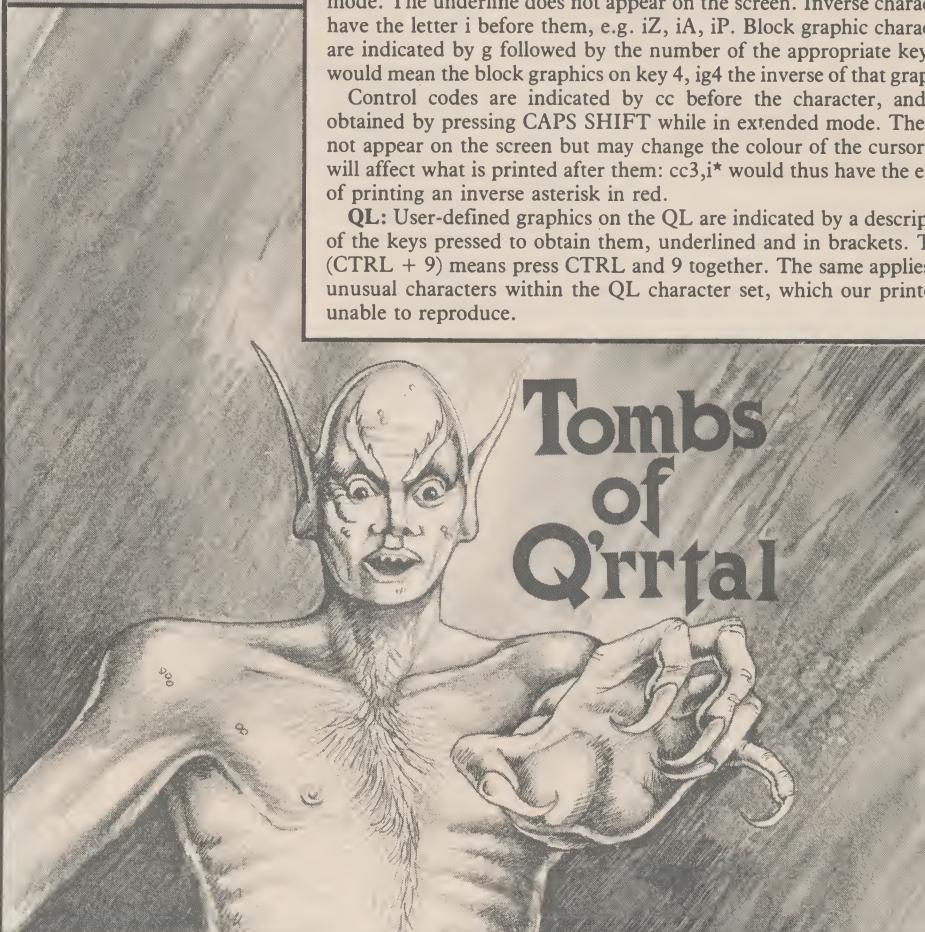


# PROGRAM PRINTOUT

```

1 RANDOMIZE
5 BORDER 1: INK 0: PAPER 7: C
LS
10 GO SUB 6000
20 REM 26.2.85 Steve Williams
30 GO SUB 8000
40 GO TO 150
100 REM mainline
110 LET die=INT (RND*10)
120 IF die=0 THEN GO TO 7200
130 IF die=1 THEN GO TO 7400
140 IF die<6 THEN GO TO 7600
150 GO SUB 6850: GO SUB 6800: P
RINT AT 13,1;"You see a door ahe
ad..."TAB 1;"Options:-"TAB 1
;"(1) Go in"TAB 1;"(2) Walk on
by": GO SUB 8900: BEEP .1,10
160 IF INKEY$="" THEN GO TO 16
0
170 IF INKEY$="1" THEN GO TO 2
10
180 IF INKEY$="2" THEN GO TO 7
800
190 GO SUB 6900: GO TO 160
220 GO SUB 6800: LET die=INT (R
ND*3)
230 IF die=0 THEN GO TO 500
240 PRINT AT 13,1;"The door is
locked";"TAB 1;"Options:-"TAB
1;"(1) leave"TAB 1;"(2) smash
it down": BEEP .1,10
250 IF INKEY$="" THEN GO TO 25
0
260 IF INKEY$="1" THEN GO TO 7
800
270 IF INKEY$="2" THEN GO TO 3
00
280 GO SUB 6900: GO TO 250
300 GO SUB 6800: LET die=INT (R
ND*10)
310 IF die<hits THEN GO TO 400
320 BEEP .3,5: BEEP .5,0: PRINT
AT 13,1;"It won't budge so you
decide to leave"TAB 5;k$:
330 IF INKEY$="" THEN GO TO 33
0
340 GO TO 7800
400 GO SUB 6850: GO SUB 8400: P
RINT AT 13,1;"You smash it down
and go inside"TAB 5;k$: BEEP .
1,10
410 IF INKEY$="" THEN GO TO 41
0
500 GO SUB 6800: LET die=INT (R
ND*3)
510 IF die>0 THEN GO TO 600
520 GO SUB 8500: PRINT AT 13,1;
"There is no-one here..."TAB 1;
Options:-"TAB 1;"(1) Search th
e room"TAB 1;"(2) leave": BEEP
.1,0
530 IF INKEY$="" THEN GO TO 53
0
540 IF INKEY$="1" THEN GO TO 5
80
550 IF INKEY$="2" THEN GO TO 7
800
570 GO SUB 6900: GO TO 530
580 GO SUB 6800: LET tres=INT (
RND*4)
590 LET time=time+1: GO SUB 660
0
595 GO TO 100
600 GO SUB 6850: LET die=INT (R
ND*8): GO SUB 9000+die*100
610 READ mhtk,mstren,mspeed,mpt
s,m$
620 PRINT FLASH 1;AT 1,1;m$
630 BEEP .1,10: PRINT AT 13,1;"
Options:-"TAB 1;"(1) Fight it"
TAB 1;"(2) Run away"
640 LET f=0
650 IF INKEY$="" THEN GO TO 67
0
660 GO TO 800
670 LET f=f+1: BEEP .05,f*2

```



**D**OOM AWAITS the unwary in the Tombs of Q'rrtal. A combination of arcade skills and adventure wisdom will help you survive the nameless horrors within, and possibly win you enough treasure to make the risk worthwhile.

Written by Steve Williams of Malvern, Worcester, *Tombs of Q'rrtal* takes you into an underground labyrinth to do battle for your life. The modular system of programming will enable experienced users to add their own monsters and special problems if they wish.

*The program uses our special abbreviations for graphics characters, so please read the instructions above before entering the listing.*

```

680 IF f>20 THEN GO TO 700
690 GO TO 650
700 GO SUB 6800
710 PRINT AT 13,1;"It was quick
er...you must fight": FOR f=1 TO
5: BEEP .1,30: NEXT f
720 GO TO 1000
800 IF INKEY$="1" THEN GO TO 1
000
810 IF INKEY$="2" THEN GO TO 8
40
820 GO SUB 6900
830 GO TO 640
840 IF speed>mspeed THEN GO TO

```

```

6200
850 GO SUB 6800
860 PRINT AT 13,1;"You are unab
le to get away": FOR f=1 TO 20:
NEXT f
870 GO TO 1000
1000 GO SUB 6800
1010 PRINT AT 13,1;"You are now
in combat....."
1020 FOR f=1 TO 5: BEEP .1,20: N
EXT f: GO SUB 2000: GO SUB 6800:
LET factor=mstren+INT (RND*6+1)

```

*continued on page 78*

## GRAPHICS INSTRUCTIONS

IN GENERAL, graphics abbreviations are enclosed in brackets, which should not be entered. A string of the same graphics character is represented in the form (3\*A) which would be entered as AAA, where A is the graphics character. A space, where it is important to have the correct number of spaces, is indicated by (sp). Spaces in text will not normally be indicated. Where several graphics characters are used, they are separated by commas, which should not be entered. With Spectrum and QL listings the letter I has a flat top and the numeral 1 has a sloping top.

The above applies to all Sinclair machines. The following instructions are for specific machines.

**ZX-81:** ZX-81 listings are generally reproduced as they appear when you enter them, spaces and all. Where extensive graphics are used, REM statements will be inserted to provide a guide to the position of each character.

**Spectrum:** User-defined graphics are represented by underlined letters, without brackets. Type the appropriate letter while in graphics mode. The underline does not appear on the screen. Inverse characters have the letter i before them, e.g. iZ, iA, iP. Block graphic characters are indicated by g followed by the number of the appropriate key: g4 would mean the block graphics on key 4, ig4 the inverse of that graphic.

Control codes are indicated by cc before the character, and are obtained by pressing CAPS SHIFT while in extended mode. They do not appear on the screen but may change the colour of the cursor and will affect what is printed after them: cc3,i\* would thus have the effect of printing an inverse asterisk in red.

**QL:** User-defined graphics on the QL are indicated by a description of the keys pressed to obtain them, underlined and in brackets. Thus (CTRL + 9) means press CTRL and 9 together. The same applies for unusual characters within the QL character set, which our printer is unable to reproduce.



continued from page 77

```

-stren-INT (RND*5)-(score>4)-(score>7)
1030 IF factor>0 THEN GO TO 110
1040 IF factor<0 THEN GO TO 120
1050 PRINT AT 13,1;"The battle continues..."
1060 FOR f=1 TO 200: NEXT f: GO SUB 6800
1070 GO TO 1400
1100 PRINT AT 13,1;"You have been wounded"
1110 LET hits=hits-factor: FOR f=1 TO 200: NEXT f
1120 GO SUB 6400
1130 GO SUB 6800
1140 GO TO 1400
1200 LET mhtk=mhtk+factor
1210 IF mhtk<=0 THEN GO TO 1250
1220 PRINT AT 13,1;"You wounded it"
1230 FOR f=1 TO 200: NEXT f
1240 GO SUB 6800: GO TO 1400
1250 GO SUB 8500: LET pts=pts+mpts
1260 PRINT AT 13,1;"You killed it...";AT 9,4;pts
1270 FOR f=1 TO 200: NEXT f: GO SUB 6800
1280 LET time=time+2: LET tres=INT (RND*8): GO SUB 6600
1290 GO TO 7800
1400 GO TO 630
2000 LET score=0: LET cx=15: LET cy=19
2020 LET ex=INT (RND*5+13): LET ey=INT (RND*4+18)
2030 FOR g=1 TO 10: PRINT PAPER INT (RND*7);AT ey,ex;"(sp)"
2035 FOR n=1 TO 15: PRINT AT cy,cx;"(sp)"
2040 LET cursor=CODE INKEY$
2045 LET cy=cy+(cursor=54 AND cy<21)-(cursor=55 AND cy>17)
2050 LET cx=cx+(cursor=56 AND cx<31)-(cursor=53 AND cx>0)
2052 REM to use cursor keys on spectrum+ put 8-11 insted of 53-56 in the above two lines
2060 IF (ex=cx AND ey=cy) THEN LET score=score+1: BEEP .1,10: LET n=n+20
2070 PRINT AT cy,cx;"+"
2075 NEXT n: PRINT AT ey,ex;"(sp)"
2080 LET ex=ex+(INT (RND*3) AND ex<30)-(INT (RND*3) AND ex>1)
2090 LET ey=ey+(INT (RND*2) AND ey<21)-(INT (RND*2) AND ey>17)
2100 NEXT g
2110 RETURN
2130 PRINT AT 18,20;"(ig8)": NEXT q
2140 RETURN
6000 REM Instructions
6010 PRINT "TAB 10;"The dungeon"
6020 PRINT "OBJECT:Gain as many points as possible in the time limit.This is done by killing monsters and getting their treasure."
6030 PRINT "Your strength is shown by your hits to kill (HTK) and you die if this drops to zero."
6040 PRINT " (Press any key to continue)"
6050 CLS: FOR f=1 TO 50: NEXT f
6060 PRINT: PRINT TAB 13;"Combat"
6070 PRINT " When fighting a monster, a moving square will appear. Try to hit it with the + using keys 5-8 as help to decide who is hit. You must do this every round in combat"
6080 PRINT: PRINT " (Press any key to continue)"
6090 PAUSE 0
6100 RETURN
6200 REM Escape
6210 PRINT AT 1,1;"(8*sp)"
6220 GO SUB 6800: PRINT AT 13,1;

```

```

"You escape....."
6230 FOR f=1 TO 10: BEEP .1,f: NEXT f: GO TO 7800
6400 REM Check for hits=0
6410 IF hits>0 THEN GO TO 6500
6420 PRINT AT 6,4;"0": GO SUB 6800
6430 FOR f=1 TO 50: NEXT f: PRINT AT 13,1;"Too bad you have died from your wounds." s=stop, any other=newgame"
6440 BEEP .3,10: BEEP .6,-10
6450 IF INKEY$="" THEN GO TO 6450
6470 IF INKEY$="s" THEN STOP
6480 RUN 20
6500 PRINT AT 6,4;"(2*sp)";AT 6,4;hits
6510 RETURN
6600 REM Treasure
6610 IF tres>0 THEN GO TO 6700
6620 PRINT AT 13,1;"Nothing of value here." TAB 4;k$
6630 IF INKEY$="" THEN GO TO 6630
6640 GO SUB 6800: RETURN
6700 LET pts=pts+tres
6710 CIRCLE 140,90,2: CIRCLE 147,85,3: CIRCLE 155,90,2: PLOT 145,100: DRAW 10,0: DRAW 0,-3: DRAW 0,-6,-PI: DRAW -10,0: DRAW 0,6,-PI: DRAW 0,3
6730 PRINT AT 13,1;"You found some treasure." TAB 1;k$
6740 IF INKEY$="" THEN GO TO 6740
6750 PRINT AT 9,4;"(2*sp)";AT 9,4;pts
6760 GO SUB 6800: RETURN
6790 RETURN
6800 REM clear messages
6810 FOR f=1 TO 20: NEXT f: FOR f=13 TO 21: PRINT AT f,0;c$: NEXT f: RETURN
6820 PRINT AT 1,1;"(8*sp)"
6850 REM clear screen
6860 LET paper=INT (RND*3+4): FOR f=1 TO 20: NEXT f: FOR f=1 TO 11: PRINT PAPER paper;AT f,10;"(17*sp)": NEXT f
6865 PRINT AT 1,1;"(8*sp)"
6870 RETURN
6900 REM error beep
6910 BEEP .6,0: FOR f=1 TO 20: NEXT f
6920 RETURN
7200 REM Stairs
7210 GO SUB 6850: GO SUB 6800: GO SUB 8800
7220 LET die=INT (RND*2)
7230 PRINT AT 13,1;"You arrive at a dead end with"
7240 IF die=1 THEN GO TO 7280
7250 PRINT " stairs going down."
7255 PLOT 133,94: DRAW -10,-5: DRAW 49,0: DRAW -10,5
7260 LET level=level+1: GO TO 7310
7280 PRINT " stairs going up."
7285 PLOT 133,152: DRAW -10,5: DRAW 49,0: DRAW -10,-5
7290 LET level=level-1
7310 PRINT " You must take them."
7320 PRINT "TAB 5;k$: BEEP .1,10
7330 IF INKEY$="" THEN GO TO 7330
7340 GO TO 7800
7400 REM TRAP
7410 GO SUB 6850: GO SUB 6800: GO SUB 8600
7420 LET DIE=INT (RND*2)
7430 IF DIE=0 THEN GO TO 7520
7440 PRINT AT 13,1;"You just fell down a trap and hurt yourself."
7450 LET hits=hits-1
7460 PRINT "TAB 5;k$
7470 IF INKEY$="" THEN GO TO 7470
7480 GO SUB 6400
7490 GO TO 7570
7520 PRINT AT 13,1;"You just fell down a trap but were not hurt."
7550 PRINT "TAB 5;k$
7560 IF INKEY$="" THEN GO TO 7560

```





```

7570 LET level=level+1
7580 GO TO 7800
7600 REM Corridor
7610 GO SUB 6850: GO SUB 6800: G
O SUB 8700
7620 PRINT AT 13,1;"You are in a
corridor." TAB 5;k$
7630 IF INKEY$="" THEN GO TO 7630
7640 GO TO 7800
7800 REM timecheck
7810 GO SUB 6800
7820 LET time=time+1
7830 IF time<50 THEN GO TO 100
7840 PRINT AT 13,1;"Your time li
mit is up." TAB 1;"s to stop, a
nother for new game"
7850 IF INKEY$="" THEN GO TO 78
50
7860 IF INKEY$="s" OR INKEY$="S"
THEN CLS: STOP
7870 RUN 20
8000 REM set up
8010 PAPER 7: BORDER 1: CLS
8020 FOR f=1 TO 11: PRINT PAPER
7;AT f,10;"(17*sp)": NEXT f
8030 PLOT 79,79: DRAW 137,0: DRA
W 0,89: DRAW -137,0: DRAW 0,-89
8040 PLOT 15,90: DRAW 45,0: DRAW
0,55: DRAW -45,0: DRAW 0,-55
8050 PRINT AT 5,3;"HTK";AT 8,3;"
PTS";AT 6,4;"20";AT 9,4;"0"
8100 LET c$="(32*sp)"
8110 LET k$="(any key to continu
e)"
8140 LET stren=3
8150 LET speed=INT (RND*4)
8160 LET level=1
8170 LET hits=20
8180 LET time=0
8190 LET pts=0
8199 RETURN
8400 REM Smash door
8410 PLOT 125,80: DRAW 0,45: DRA
W 50,0,-PI: DRAW 0,-45
8499 RETURN
8500 REM Room
8510 GO SUB 6850
8520 PLOT 79,79: DRAW 40,15: DRA
W 57,0: DRAW 40,-15: PLOT 79,168
: DRAW 40,-15: DRAW 57,0: DRAW 4
0,15: PLOT 119,94: DRAW 0,59: PL
OT 177,94: DRAW 0,59
8590 RETURN
8600 REM Trap
8610 PLOT 80,79: DRAW 40,20: DRA
W 0,48: DRAW -40,20: PLOT 216,79
: DRAW -40,20: DRAW 0,48: DRAW 4
0,20: PLOT 108,167: DRAW 20,-6:
DRAW 40,0: DRAW 20,6
8620 BEEP .1,10
8690 RETURN
8700 REM Corridor
8710 PLOT 80,79: DRAW 40,20: DRA
W 0,48: DRAW -40,20: PLOT 216,79
: DRAW -40,20: DRAW 0,48: DRAW 4
0,20: BEEP .1,10
8790 RETURN

```

```

8800 REM Stairs
8810 PLOT 138,90: DRAW 0,65: PLO
T 158,90: DRAW 0,65: PLOT 138,15
0: DRAW 20,0: PLOT 138,140: DRAW
20,0: PLOT 138,130: DRAW 20,0:
PLOT 138,120: DRAW 20,0: PLOT 13
8,110: DRAW 20,0: PLOT 138,100:
DRAW 20,0
8820 PLOT 80,79: DRAW 30,15: DRA
W 0,58: DRAW -30,15: PLOT 216,79
: DRAW -30,15: DRAW 0,58: DRAW 3
0,15: PLOT 108,94: DRAW 78,0: PL
OT 110,152: DRAW 78,0
8899 RETURN
8900 REM door
8910 PLOT 125,80: DRAW 0,45: DRA
W 50,0,-PI: DRAW 0,-45: CIRCLE 1
65,115,3
8990 RETURN
9000 REM Ghost
9010 PLOT 140,140: DRAW 20,0,-1.
5*PI: DRAW 20,20: DRAW 10,-30: D
RAW -25,5: DRAW 10,-45
9020 DRAW -50,0,-PI/4: DRAW 10,4
5: DRAW -25,-5: DRAW 10,30: DRAW
20,-20
9030 PLOT 145,155: DRAW 0,-10,PI
/2: DRAW 0,10,PI/3: PLOT 155,155
: DRAW 0,-10,PI/3: DRAW 0,10,PI/
2
9040 PLOT 157,140: DRAW -15,-5,P
I/3: DRAW 15,5,PI/3
9050 PLOT 80,110: DRAW 50,0: PLO
T 172,110: DRAW 44,0
9070 RESTORE 9000
9080 DATA 4,1,3,10,"Ghost"
9090 RETURN
9100 REM Troll
9110 CIRCLE 150,150,10: CIRCLE 1
46,153,2: CIRCLE 154,153,2
9120 PLOT 147,143: DRAW 6,0,-PI:
PLOT 143,144: DRAW -15,-30,PI/2
: DRAW 10,20,-PI/2
9130 DRAW 0,-40,PI/5: DRAW -10,-
5: DRAW 10,0: DRAW 10,20,PI/2: D
RAW 2,0: DRAW 10,-20,PI/2: DRAW
10,0: DRAW -10,5: DRAW 0,40,PI/5
: DRAW 10,-20,-PI/2: DRAW -12,30
,PI/2
9140 PLOT 141,128: DRAW 5,0,PI/2
: PLOT 151,128: DRAW 5,0,PI/2
9150 PLOT 129,90: DRAW 0,70: DRA
W -3,-8: DRAW 6,0: DRAW -3,8
9160 PLOT 80,110: DRAW 55,0: PLO
T 163,110: DRAW 53,0
9170 RESTORE 9100
9180 DATA 9,2,1,25,"Troll"
9190 RETURN
9200 REM spider
9210 CIRCLE 150,115,20: CIRCLE 1
50,110,10: CIRCLE 147,110,2: CIR
CLE 154,110,2: PLOT 145,103: DRA
W 10,0,-PI/2
9220 PLOT 164,130: DRAW 15,15: D
RAW 15,-45: PLOT 135,130: DRAW -
15,15: DRAW -15,-45
9230 PLOT 164,110: DRAW 12,3: DR

```

```

AW 5,-20: PLOT 137,110: DRAW -12
,3: DRAW -5,-20
9240 PLOT 80,105: DRAW 53,0: PLO
T 168,105: DRAW 48,0
9250 RESTORE 9200
9260 DATA 5,1,1,10,"Spider"
9290 RETURN
9295 REM
9300 REM Skeleton
9310 CIRCLE 150,145,6.5: CIRCLE
148,146,1: CIRCLE 152,146,1: PLO
T 150,143: PLOT 149,141: DRAW 3,
0
9320 PLOT 150,138: DRAW 0,-19: P
LOT 142,89: DRAW 3,2: DRAW 0,25:
DRAW 5,3: DRAW 5,-3: DRAW 0,-25
: DRAW 3,-2
9330 PLOT 125,138: DRAW 10,-12:
DRAW 10,10: DRAW 10,0: DRAW 4,-4
: CIRCLE 162,128,5
9340 PLOT 145,133: DRAW 10,0: PL
OT 145,131: DRAW 10,0: PLOT 145,
129: DRAW 10,0: PLOT 145,127: DR
AW 10,0: PLOT 145,125: DRAW 10,0
: PLOT 146,123: DRAW 8,0
9350 PLOT 80,105: DRAW 136,0
9360 RESTORE 9300
9370 DATA 6,2,2,15,"Skeleton"
9390 RETURN
9400 REM killer bat
9410 CIRCLE 150,150,5: PLOT 148
,151: PLOT 152,151: PLOT 147,144
: DRAW 6,0,-PI: PLOT 154,153: DR
AW 0,4: DRAW -3,-5: PLOT 146,153
: DRAW 0,4: DRAW 3,-5
9420 PLOT 145,150: DRAW -20,0: D
RAW 8,-8,PI/2: DRAW 6,-6,PI/2: D
RAW 12,-15: DRAW 12,15: DRAW 6,6
,PI/2: DRAW 8,8,PI/2: DRAW -20,0
9430 PLOT 142,125: DRAW 5,15: PL
OT 153,140: DRAW 5,-15: PLOT 80,
105: DRAW 136,0
9440 RESTORE 9400
9450 DATA 3,1,3,10,"bat"
9490 RETURN
9500 REM Zombie
9510 CIRCLE 150,150,7: CIRCLE 14
8,152,1: CIRCLE 152,152,1: CIRCL
E 150,147,2
9520 PLOT 145,144: DRAW -25,15,P
I/6: DRAW -7,-7: DRAW 6,3: DRAW
25,-15,-PI/6: DRAW 0,-20: DRAW -
10,-10: DRAW 0,-15: DRAW -3,-1:
DRAW 8,0: DRAW 0,15: DRAW 11,10
9530 PLOT 150,120: DRAW 0,-18: D
RAW 6,-6: DRAW 5,0: DRAW -6,6: D
RAW 0,38: DRAW 25,15,-PI/6: DRAW
6,-3: DRAW -7,7: DRAW -25,-15,P
I/6
9540 PLOT 80,105: DRAW 53,0: PLO
T 139,105: DRAW 10,0: PLOT 155,1
05: DRAW 61,0
9550 RESTORE 9500
9560 DATA 10,1,1,15,"Zombie"
9570 RETURN
9600 REM Rockman
9610 CIRCLE 140,120,20: PLOT 145
,110: DRAW -10,3,PI/4: DRAW 10,-
3,PI: CIRCLE 135,123,4: CIRCLE 1
37,122,1: CIRCLE 150,118,5: CIRCL
E 152,115,1
9620 PLOT 123,120: DRAW -10,-10:
DRAW 10,-10: PLOT 160,120: DRAW
5,3: DRAW 3,12
9630 PLOT 80,105: DRAW 48,0: PLO
T 154,105: DRAW 62,0
9650 RESTORE 9600
9660 DATA 8,1,1,10,"Rockman"
9670 RETURN
9700 REM goblin
9710 CIRCLE 150,130,5: CIRCLE 15
5,115,2: CIRCLE 155,115,6
9720 PLOT 149,131: PLOT 152,131:
PLOT 149,128: DRAW 2,0
9730 PLOT 147,126: DRAW 0,-16,PI
: DRAW 20,20: DRAW -20,-16: DRAW
-2,8,-PI/2
9740 PLOT 153,125: DRAW 3,-4: PL
OT 144,111: DRAW -1,-20,PI/3: DR
AW 3,0: DRAW 4,17,-PI/3: DRAW 4,
-17,-PI/3: DRAW 3,0: DRAW -1,18,
PI/3
9750 RESTORE 9700
9760 PLOT 80,105: DRAW 61,0: PLO
T 148,105: DRAW 3,0: PLOT 159,10
5: DRAW 56,0
9770 DATA 5,2,3,10,"Goblin"
9780 RETURN

```





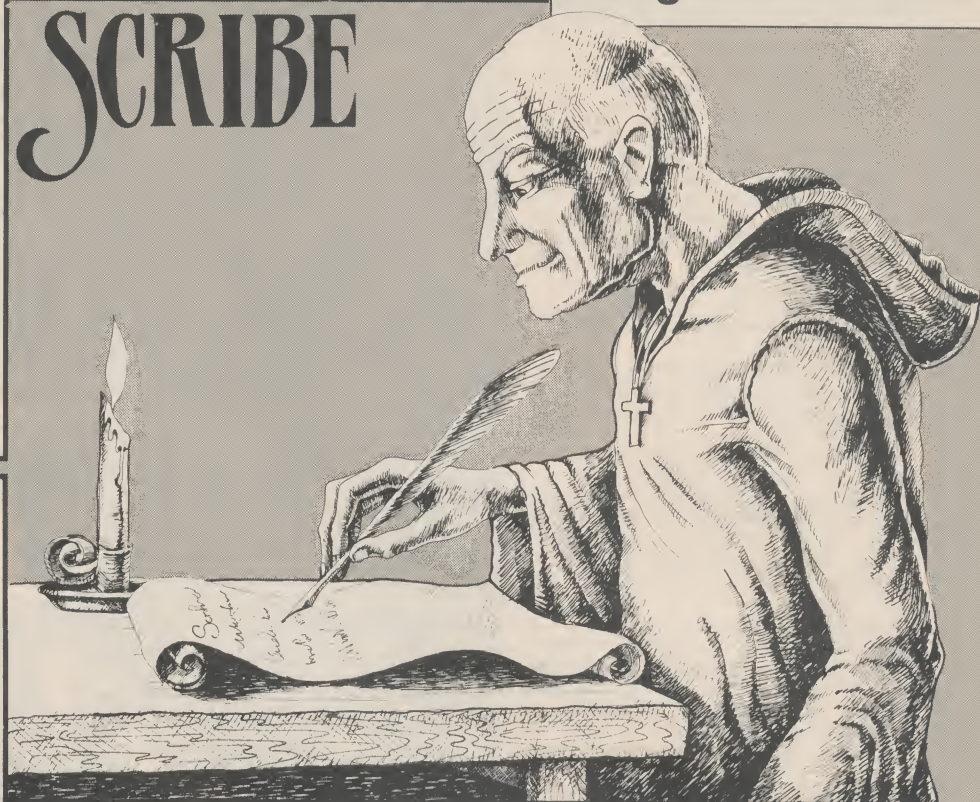


**B**ACK-UP your QL programs the easy way with **Scribe** by David Titterington of West Bradford in Lancashire.

The program will ask you to place the cartridges to be copied in the appropriate drives and then gives you a choice. You can copy the lot, or select particular files using the cursor. You do not need to format the new cartridge in advance; you can therefore add programs to an existing selection.

Remember that copying commercial programs is illegal, unless sanctioned by the company, and even then you must only make copies for your personal use.

# SCRIBE



## Program Printout

```

100 num=3
110 DIM a$(70,20)
120 k=0
130 PAPER 3:INK 4
140 MODE 4
150 CSIZE 2,0
160 PRINT "Place source Cartridge in MDV1_"
170 PRINT"\and Destination Cartridge in MDV2_"
180 CSIZE 0,0
190 REPEAT ask1
200 CLS#0
210 INPUT#0;"FORMAT MDV2_ (y/n) ? ";c$
220 IF c$=="y" THEN
230 REPEAT ask2
240 CLS#0
250 INPUT#0;"Type New Filename (Max 8 Letters) ? ";d$
260 IF LEN(d$)>8 THEN
270 END REPEAT ask2
280 ELSE
290 REPEAT loop3
300 FORMAT "mdv2_"&d$
310 CLS#0
320 END IF
330 REPEAT ask6
340 CLS#0
350 INPUT#0;"REPEAT FORMAT (y/n) ";f$
360 IF f$=="n" THEN EXIT loop3
370 IF f$=="y" THEN
380 END REPEAT loop3
390 ELSE
400 END REPEAT ask6
410 END IF
420 ELSE
430 IF c$=="n" THEN EXIT ask1
440 END REPEAT ask1
450 END IF
460 CLS#0
470 PRINT#0;"PLEASE WAIT, GETTING DIRECTORY"
480 OPEN_NEW#3,mdv2_12345678
490 DIR#3,mdv1_
500 CLOSE#3
510 OPEN#3,mdv2_12345678
520 REPEAT loop
530 IF NOT EOF(#3) THEN
540 k=k+1
550 INPUT#3;a$(k)
560 IF a$(k)="12345678" THEN k=k-1
570 ELSE
580 EXIT loop
590 END IF
600 END REPEAT loop
610 CLS
620 CLOSE#3:DELETE mdv2_12345678
630 DIM e(k-2)
640 CSIZE 2,0
650 UNDER 1
660 PRINT "Cartridge name : "!"a$(1)\a$(2)
670 UNDER 0
680 CSIZE 0,0
690 FOR l=3 TO k
700 SELECT ON l
710 =3 TO 11:AT 1,2

```

```

720 =12 TO 18:AT 1,1
730 =19 TO 34:AT 1-16,20
740 =35 TO 50:AT 1-32,39
750 =51 TO 66:AT 1-48,58
760 END SELECT
770 PRINT 1-2!"-!"a$(1)
780 END FOR l
790 CLS#0
800 PRINT#0;"SPACE-BAR - BACK-UP ALL MDV1_"
810 PRINT#0;"ENTER - BACK-UP part."
820 PRINT#0;"ESCAPE - ABORT."
830 REPEAT l
840 m=CODE(INKEY$)
850 SELECT ON m
860 =27
870 CLS#0:rerun
880 =32
890 FOR n=1 TO k-2:e(n)=1
900 backup
910 END REPEAT ask3
920 =10
930 selectcopies
940 END SELECT
950 END REPEAT l
1000 DEFINE PROCEDURE selectcopies
1010 x=0
1020 y=3
1030 CLS#0
1040 PRINT#0;"Move Cursor - ARROW KEYS."!"ENTER - COPY FILE."
1050 PRINT#0;" ( Repeat to remove a FILE from BACK-UP LIST )."
1060 PRINT#0;"!HIT F1 WHEN FINISHED"
1070 REPEAT printloop
1080 y1=y:x1=x
1090 AT y,x
1100 PRINT "*"
1110 ch=CODE(INKEY$(#1))
1120 SELECT ON ch
1130 =10
1140 AT y,x+6
1150 IF e(num-2)=0 THEN
1160 PAPER 7:INK 0
1170 PRINT a$(num)
1180 PAPER 0:INK 7
1190 e(num-2)=1
1200 num=num+1
1210 ELSE
1220 PRINT a$(num)
1230 e(num-2)=0

```

```

1240 END IF
1250 =208
1260 y=y-1
1270 num=num-1
1280 =216
1290 y=y+1
1300 num=num+1
1310 =232
1320 CLS#0
1330 PRINT#0;"HIT ANY KEY TO COMMENCE BACKUP."
1340 AT y,x:PRINT " "
1350 PAUSE
1360 backup
1370 END SELECT
1380 IF num<3 THEN num=3
1390 IF y<3 THEN y=3
1400 IF num>k THEN num=k
1410 SELECT ON num
1420 =3 TO 18:x=0:y=num
1430 =19 TO 34:x=19:y=num-16
1440 =35 TO 50:x=38:y=num-32
1450 =51 TO 66:x=57:y=num-48
1460 END SELECT
1470 AT y1,x1:PRINT " "
1480 END REPEAT printloop
1490 END DEFINE
2000 DEFINE PROCEDURE backup
2010 CLS#0
2020 PRINT#0;"Backing up MDV1_ To MDV2_"
2030 OPEN#5,scr_100x22a220x230
2040 CLS#5
2050 INK#5,3
2060 BORDER#5,6,2,1
2070 FOR l=3 TO k
2080 IF e(l-2)=1 THEN
2090 COPY "mdv1_"&a$(1) TO "mdv2_"&a$(1)
2100 ELSE
2110 END IF
2120 AT#5,0,0
2130 PRINT#5;1-2!"out of"!k-2
2140 END FOR l
2150 CLOSE#5
2160 rerun
2170 END DEFINE
3000 DEFINE PROCEDURE rerun
3010 AT#0,0,0:PRINT#0;"RUN AGAIN (y/n) ? "
3020 AT#0,0,18:INPUT#0;g$
3030 IF g$=="y" THEN RUN
3040 IF g$=="n" THEN STOP
3050 rerun
3060 END DEFINE

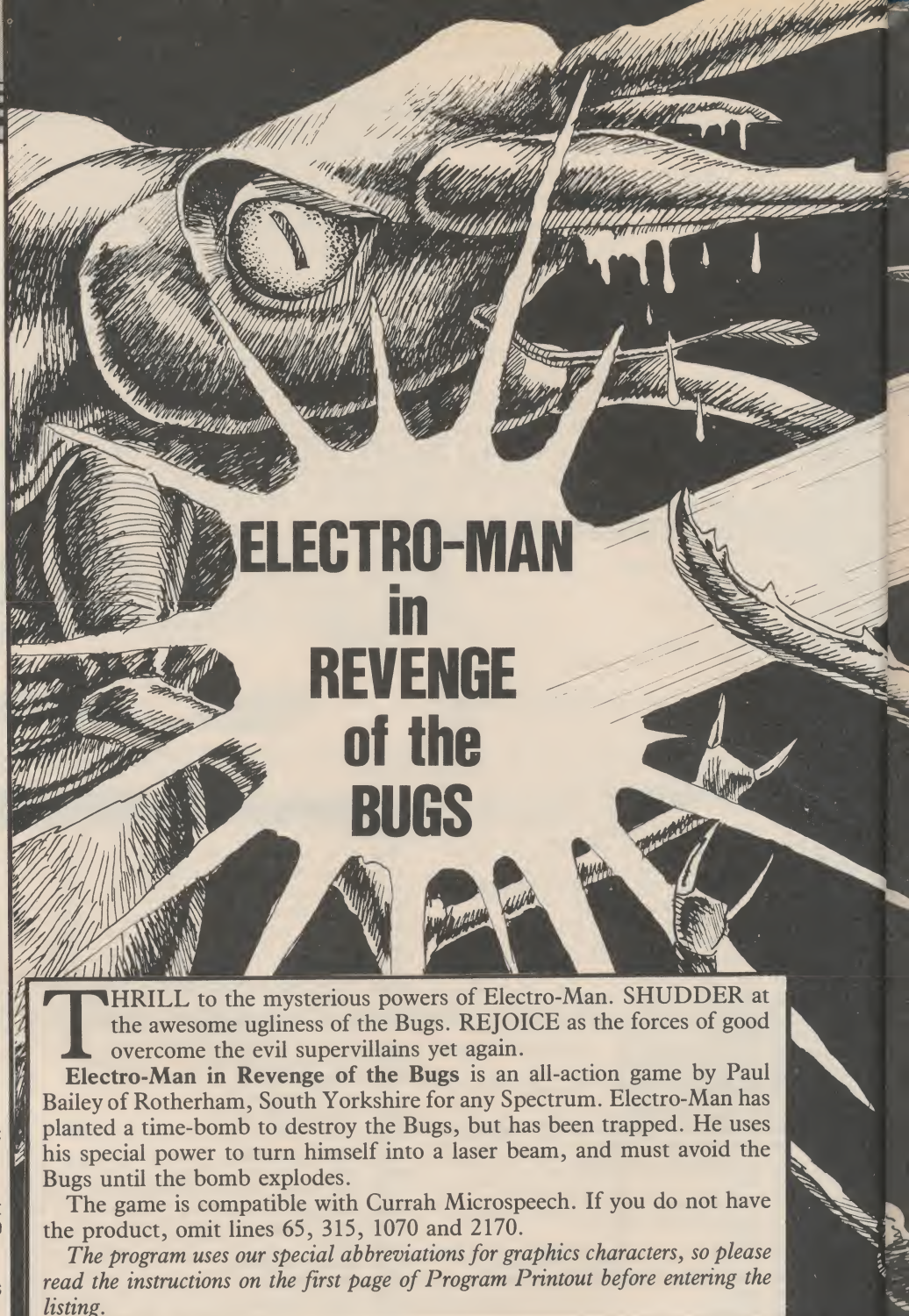
```



```

1 LET keys=0
2 LET BUG=1
3 LET C=1
5 BORDER 0: PAPER 0: INK 5: C
LS
10 REM *****
20 REM *ELECTRO - MAN*
30 REM *****
40 REM      I N
41 REM REVENGE OF THE BUGS
42 REM
50 REM1985 By Paul Bailey
60 REM
65 LET S$="PL(EE)S'W(AY)T"
70 FLASH 0: CLS
98 POKE 23658,255
99 PRINT AT 10,10; INK 7; PAPE
R 1;"PLEASE WAIT"
130 REM Bug 1
140 FOR g=USR "C" TO USR "F"+7:
READ d: POKE g,d: NEXT g
150 DATA 129,247,236,89,60,63,1
20,112,129,239,55,154,60,252,30,
14,96,40,31,15,30,12,116,240,6,1
2,248,240,123,54,46,28
160 REM Bug 2
170 FOR g=USR "G" TO USR "J"+7:
READ d: POKE g,d: NEXT g
180 DATA 121,247,236,153,188,63
,127,113,158,239,55,153,61,252,2
54,142,102,63,31,15,222,108,116,
56,102,252,248,240,120,48,46,15
220 REM Barrier
230 FOR g=USR "N" TO USR "N"+7:
READ d: POKE g,d: NEXT g
240 DATA 0,0,129,195,195,195,12
9,0
250 REM Mr. 'CRASH'!
260 FOR g=USR "O" TO USR "T"+7:
READ d: POKE g,d: NEXT g
270 DATA 199,255,91,61,35,117,1
21,255,129,231,255,255,255,219,2
55,255,227,255,218,188,196,174,1
58,255,202,234,96,106,106,254,63
,7,170,170,0,0,170,170,255,255,1
63,167,6,166,166,190,252,224
271 FOR G=USR "U" TO USR "U"+7:
READ D: POKE G,D: NEXT G
272 DATA BIN 01111110,BIN 11111
111,BIN 11111111,BIN 11111111,BI
N 11111111,BIN 11111111,BIN 1111
111,BIN 01111110
280 PAPER 0: BORDER 0: INK 5: C
LS
281 LET D=1: BORDER 0: PAPER 0:
INK 5
290 FLASH 1: INK 6: LET A$="ELE
CTRO - MAN": GO SUB 400: FLASH 0
300 LET A$="I N": GO SUB 400
310 INVERSE 1: LET A$="REVENGE
OF THE BUGS": GO SUB 400: INVERS
E 0: INK 5
315 LET S$="D(OUU) 'Y(OUU) 'WONT'
INSTRC(SH)uNS"
320 LET A$="DO YOU WANT INSTRU
CTIONS? Y/N": GO SUB 400: PAUSE 0
: LET D$=CHR$(PEEK 23560): IF D
$="N" THEN GO TO 500
330 CLS : LET D=1: PRINT : LET
A$="I N S T R U C T I O N S": GO
SUB 400
340 LET A$="You take the part o
f ELECTRO MAN": GO SUB 400
341 LET A$="who has the power t
o change into": GO SUB 400
342 LET A$="anything he likes.H
is mission is": GO SUB 400
343 LET A$="to destroy the bugs
in the": GO SUB 400
344 LET A$="national defence co
mputer": GO SUB 400
356 LET A$="For this mission he
has changed": GO SUB 400
357 LET A$="into a laser which
you control": GO SUB 400
359 FLASH 1: INK 7: BRIGHT 1: L
ET A$="ANY KEY TO GO ON": GO SUB
400: PAUSE 0: FLASH 0: CLS : LE
T D=1
360 LET A$="C O N T R O L S": G
O SUB 400
361 INK 6: LET A$="Q-----LEFT"

```



## ELECTRO-MAN in REVENGE of the BUGS

**T**HRILL to the mysterious powers of Electro-Man. SHUDDER at the awesome ugliness of the Bugs. REJOICE as the forces of good overcome the evil supervillains yet again.

Electro-Man in Revenge of the Bugs is an all-action game by Paul Bailey of Rotherham, South Yorkshire for any Spectrum. Electro-Man has planted a time-bomb to destroy the Bugs, but has been trapped. He uses his special power to turn himself into a laser beam, and must avoid the Bugs until the bomb explodes.

The game is compatible with Currah Microspeech. If you do not have the product, omit lines 65, 315, 1070 and 2170.

*The program uses our special abbreviations for graphics characters, so please read the instructions on the first page of Program Printout before entering the listing.*

```

: GO SUB 400
362 LET A$="W-----RIGHT": GO S
UB 400
363 LET A$="L-----DOWN": GO SU
B 400
364 LET A$="P-----UP": GO SUB
400
365 LET D=D-1: LET A$="DON'T TO
UCH ANYTHING AT ALL ON": GO SUB
400: LET A$="THE SCREEN OR YOU W
ILL DIE!": LET D=D-1: GO SUB 400
: INK 5: LET A$="There is a time
bomb in the": GO SUB 400
366 LET A$="centre of the scree
n.When it": GO SUB 400
367 LET A$="explodes it will ki
ll the bugs": GO SUB 400
370 FLASH 1: INK 7: BRIGHT 1: L
ET A$="PRESS ANY KEY TO PLAY": G
O SUB 400: FLASH 0: PAUSE 0: GO
TO 500
400 LET X=LEN (A$): LET X=INT (
32-X)/2
410 FOR G=1 TO LEN A$: BEEP .00
4,6
420 PRINT AT D,X+G-1;A$(G TO G)
: NEXT G: LET D=D+2: RETURN

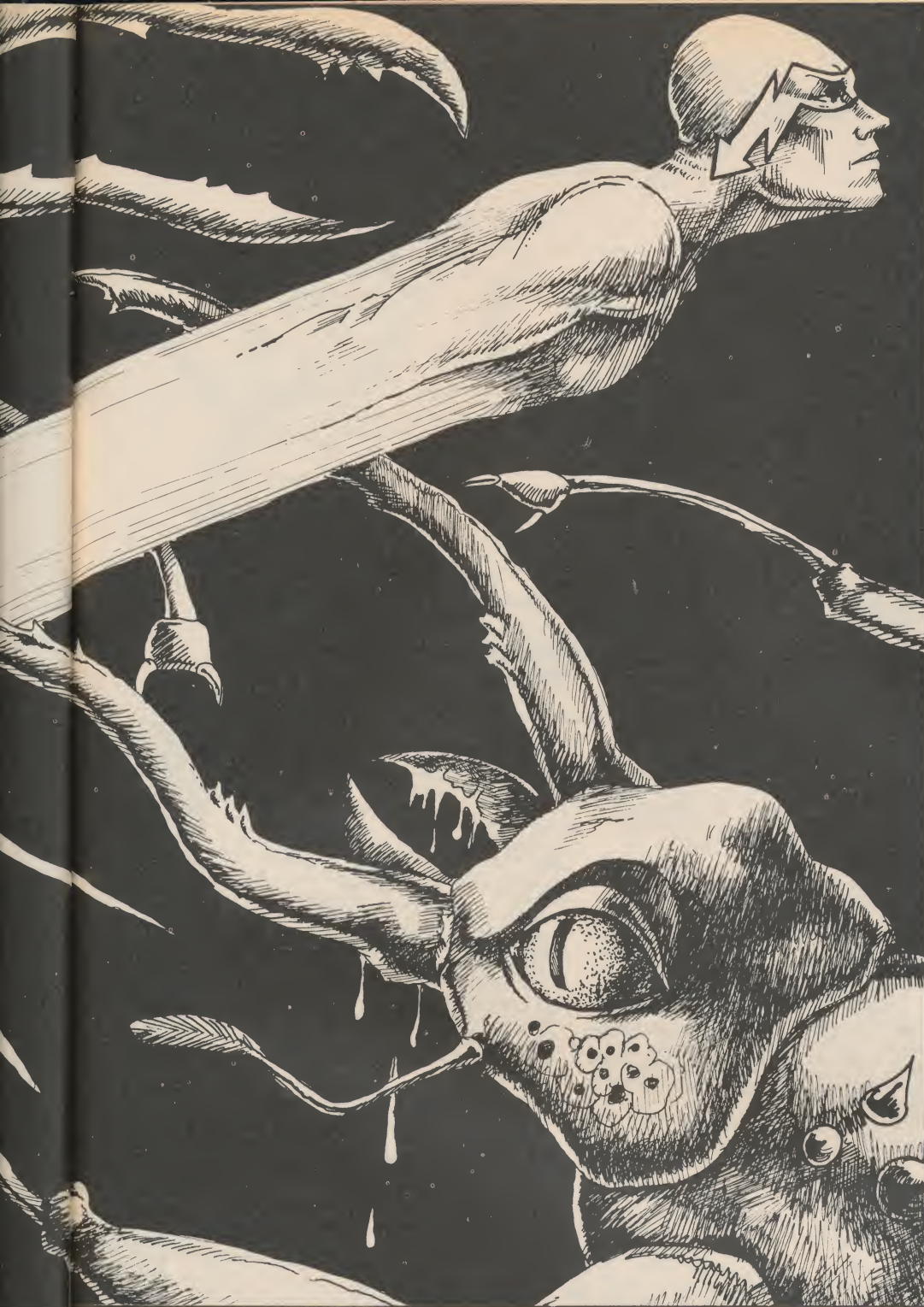
```

```

430 REM *****
440 REM
500 INK 5: PAPER 0: BORDER 0: C
LS : REM      VARIABLES
510 LET SC=0: LET MEN=3: LET TM
=20: LET BO=TM
520 DIM H$(2,2): DIM L$(2,2)
530 LET H$(1)="CD": LET H$(2)="
GH"
540 LET L$(1)="EF": LET L$(2)="
IJ"
550 LET X=240: LET Y=88
560 LET H=-3: LET V=-3: DIM M(2
): LET M(1)=16: LET M(2)=16
580 LET BUG=1
600 REM      SCREEN
610 PLOT 252,8: DRAW 0,167: PLO
T 254,8: DRAW 0,166: PLOT 2,8: D
RAW 95,0: DRAW 26,30: DRAW 20,0:
DRAW 26,-30: DRAW 84,0: DRAW 0,
166: DRAW -84,0: DRAW -26,-30: D
RAW -20,0: DRAW -26,30: DRAW -95
,0: DRAW 0,-166
615 PRINT AT 21,0;"(32*ig8)"
617 PRINT AT 21,0;"(32*ig8)"
620 FOR G=-10 TO 7: FOR K=1 TO

```





```

5: BEEP .003,G+H: NEXT K: NEXT G
630 PRINT AT 9,15; INK 7; BRIGH
T 1;"(g4,ig8,ig8,ig7)"
640 PRINT AT 10,15; INK 7; BRIG
HT 1;"(g5)"; INVERSE 1;TM; INVER
SE 0;"(ig5)"
650 PRINT AT 11,15; INK 7; BRIG
HT 1;"(g1,ig8,ig8,g2)"
660 LET O=-2: LET P=2
700 REM MAIN LOOP
710 FOR A=1 TO 2: PLOT INK 4;X
,Y: BEEP .002,0: BEEP .002,-4
711 FOR Z=1 TO 6: PLOT INK 4;X
,Y: BEEP .002,0: BEEP .002,-4
720 LET HIT=POINT (X+H,Y+V): IF
HIT=1 THEN GO TO 2000
725 LET HIT=POINT (X+H,Y+V-V):
IF HIT=1 THEN GO TO 2000
726 LET HIT=POINT (X+H,Y+V-(V-1
)): IF HIT=1 THEN GO TO 2000
730 REM KEYBOARD INPUT
740 LET N=PEEK (23560)
750 LET J=H: LET H=0: LET H=H-(
N=81)+(N=87): IF H=0 THEN LET H
=J
760 LET J=V: LET V=0: LET V=V-(
N=76)+(N=80): IF V=0 THEN LET V
=J

```

```

762 LET H=H+(H=1)-(H=-1)
764 LET V=V+(V=1)-(V=-1)
770 LET X=X+H: LET Y=Y+V
771 LET T=INT (RND*10)+1: REM
BIG BUG
772 IF T>7 THEN PRINT AT 9,25;
"(3*sp)";AT 10,25;"(3*sp)": PRIN
T AT 9,2; INK 6; BRIGHT 1;"OPQ";
AT 10,2;"RST": BEEP .002,40: BEE
P .002,50: BEEP .002,60
773 IF T<3 THEN PRINT AT 9,2;"
(3*sp)";AT 10,2;"(3*sp)": PRINT
AT 9,25; INK 6; BRIGHT 1;"OPQ";A
T 10,25;"RST": BEEP .002,40: BEE
P .002,50: BEEP .002,60
775 NEXT Z
780 REM MOVE BUGS
790 BEEP .001,10: BEEP .001,20:
PRINT AT 14,M(1);"(2*sp)"; INK
3;H$(BUG);"(2*sp)": PRINT AT 15,
M(1);"(2*sp)"; INK 3;L$(BUG);"(2
*sp)"
800 BEEP .001,-10: BEEP .001,-2
0: PRINT AT 5,M(2);"(2*sp)"; INK
6;H$(BUG);"(2*sp)": PRINT AT 6,
M(2);"(2*sp)"; INK 6;L$(BUG);"(2
*sp)"

```

```

810 IF BUG=1 THEN LET BUG=2: G
O TO 830
820 LET BUG=1
830 LET M(1)=M(1)+0: LET M(2)=M
(2)+P
840 IF M(1)<10 THEN LET O=2
850 IF M(1)>17 THEN LET O=-2
860 IF M(2)<10 THEN LET P=2
870 IF M(2)>17 THEN LET P=-2
880 PRINT AT 10,16; INK 7; BRIG
HT 1; INVERSE 1;"(2*sp)"
885 PRINT AT 10,16; INK 7; BRIG
HT 1; INVERSE 1;TM
890 PRINT AT 21,1; PAPER 2; INK
6;"SCORE=";SC;"(3*sp)";"LIVES="
;MEN
895 BEEP .002,40: LET L=INT (RN
D*12)+5: LET Q=INT (RND*29)+2
896 IF ATTR (L,Q)=71 THEN GO T
O 895
897 PRINT AT L,Q; INK 4; FLASH
1;"(ig6)"
900 NEXT A: LET SC=SC+5: LET TM
=TM-1: BEEP .01,-2: IF TM>0 THEN
GO TO 700
999 REM EXPLODE!
1000 DIM B$(3,4): LET B$(1)="(g4
,ig6,ig7,g7)": LET B$(2)="(ig3,i
g4,ig8,g6)": LET B$(3)="(ig2,ig6
,g7,g6)"
1005 PRINT AT 7,15; INK 5;"BONUS
";B0*10
1006 LET SC=SC+B0*10
1011 FOR G=1 TO 20: FOR J=1 TO 3
1020 LET F=INT (RND*3)+1: LET K=
INT (RND*5)+-10
1030 BEEP .003,K+10: PRINT AT B+
J,15;B$(F)
1040 NEXT J: NEXT G
1050 PAUSE 150: CLS
1060 PRINT AT 2,15; INK 4;"OPQ";
AT 3,15; INK 4;"RST"
1070 LET S$="(II)(LL)'GET'Y(OUU)
'(DTH)IS'T(II)M'ILECTR(00)MAN"
1075 LET D=16
1080 PRINT : PRINT : LET A$="I'L
L GET YOU THIS TIME !": GO SUB 4
00
1090 PRINT : PRINT
1110 INK 6: LET A$="GET READ FOR
NEXT LEVEL!": GO SUB 400: INK 5
1120 PAUSE 0: CLS : LET X=240: L
ET Y=88: LET H=-2: LET V=2: LET
TM=80+5: GO TO 580
2000 LET X=240: LET Y=88: REM
LIVE LOST
2010 FOR J=40 TO -5 STEP -1
2020 BEEP .04,J: BORDER INT (RND
*7)+1: NEXT J
2025 LET MEN=MEN-1
2030 BORDER 0: CLS
2040 FLASH 1: FOR G=0 TO 21
2045 LET X$="(g7,ig7,g7,ig7,i
g7,g7,ig7,g7,ig7,g7,ig7,g7,ig7,
7,ig7,g7,ig7,ig7,g7,ig7,ig7,ig7
7,g7,ig7,g7,ig7,g7,ig7,ig7)"
2050 PRINT PAPER 2; INK 6; BRIG
HT 1;X$: NEXT G
2060 FLASH 0: PRINT AT 9,7;"OH N
O!,YOU CRASHED!"
2070 IF MEN>0 THEN PRINT AT 11,
10;"LIVES LEFT ";MEN
2080 IF MEN=0 THEN PRINT AT 11,
11;"GAME OVER": GO TO 2100
2090 PAUSE 0: LET H=-2: LET V=-2
: CLS: GO TO 580
2100 REM R . I . P
2105 PAUSE 0
2110 CLS : PRINT : PRINT
2120 PRINT TAB 12;"(3*sp,ig8)"
2130 PRINT TAB 12;" R.I.P "
2140 FOR G=1 TO 6: PRINT TAB 12;
"(3*sp,ig8)": NEXT G
2150 PRINT : PRINT
2160 PRINT INK 6;"(8*sp)YOUR SC
ORE WAS :";SC: PRINT : PRINT "(1
3*sp)OPQ": PRINT "(13*sp)RST"
2170 LET S$="PRES'EN(EE)'K(EE)'T
(OUU)'PL(AY)"
2180 PRINT : PRINT "(8*sp)PRESS
ANY KEY TO PLAY": PAUSE 0: GO TO
280
3000 REM END OF PROG.

```



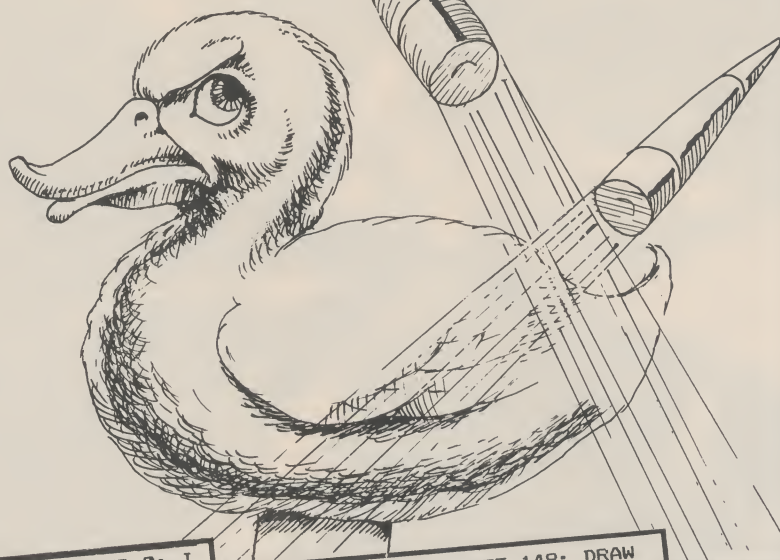
# RIFLE RANGE

**CRACK SHOTS** should have no trouble with **Rifle Range** by Michael Housley of Bradford, Yorkshire.

You must shoot as many targets as you can before your ammunition runs out. To make life more difficult your gun moves as well as the targets, and you will have to aim slightly in front to score.

The game gets progressively difficult, and there is a hi-score table included. Full instructions are provided and the game runs on a 48K Spectrum or Spectrum Plus.

*Rifle Range* uses our special abbreviations for graphics characters, so please read the instructions on the first page of Program Printout before typing in the listing.



```
1 DATA 17,64,156,33,0,64,1,0,
27,237,176,201,17,0,64,33,64,156
,1,0,27,237,176,201,33,0,88,1,0,
3,197,62,0,1,100,0,11,60,211,254
,120,177,32,248,54,7,35,54,54,19
3,11,120,177,32,231,201,32,228,2
01
```

```
2 FOR f=60000 TO 60011: READ
a: POKE f,a: NEXT f
3 FOR f=60050 TO 60061: READ
a: POKE f,a: NEXT f
4 FOR f=60100 TO 60134: READ
a: POKE f,a: NEXT f
5 DIM h(5): DIM h$(5,10)
6 FOR f=1 TO 5: LET h(f)=60000
-(f*1000): NEXT f
7 FOR f=1 TO 5: LET h$(f)="SP
ECTRUM": NEXT f
8 FOR f=60200 TO 60241: READ
a: POKE f,a: NEXT f: FOR f=60250
TO 60266: READ a: POKE f,a: NEX
T f
```

```
9 DATA 1,2,0,197,33,0,64,1,0,
4,126,15,119,35,126,7,119,35,11,
120,177,32,243,193,11,120,177,32
,1,201,33,0,80,120,177,197,1,0,4
,32,225,201,33,0,88,1,0,3,58,86,
234,119,35,11,120,177,32,246,201
2,182,182,182,182,182,182,182,18
2,182,182,0,28,30,46,126,30,28
,60,62,31,31,15,15,7,3,31,124,25
2,252,248,248,240,224
```

```
10 DATA 108,182,182,182,182,18
2,182,182,182,182,182,182,182,18
2,182,182,0,28,30,46,126,30,28
,60,62,31,31,15,15,7,3,31,124,25
2,252,248,248,240,224
```

```
20 DATA 3,12,16,35,68,72,145,1
46,146,145,72,68,35,16,12,3,192,
48,8,196,34,18,137,73,137,18,
34,196,8,48,192
```

```
30 DATA 1,1,1,3,3,3,3,255,255
,31,3,3,3,1,1,1,128,128,128,192,
192,192,248,255,255,248,192,192,
192,128,128,128
```

```
40 DATA 15,16,36,42,68,64,127,
64,224,16,72,168,68,4,252,4,32,2
4,5,7,53,73,129,255,8,48,64,192,
56,36,2,254
```

```
50 DATA 1,1,1,3,3,255,63,7,128
,128,128,192,192,255,252,224,7,1
5,14,28,56,112,224,192,224,240,1
12,56,28,14,7,3
```

```
100 FOR f=0 TO 167: READ a: POK
EUSR "a"+f,a: NEXT f
150 PAPER 2: INK 0: BRIGHT 1: B
ORDER 2: CLS
```

```
160 FOR f=0 TO 3: PRINT PAPER
5;AT f,0;"(32*sp)": NEXT f
170 FOR f=0 TO PI*2 STEP .1: PL
OT INK 6;235+SIN (f/PI)*14,160+
COS (f/PI)*14: DRAW INK 6;-(2
35+SIN (f/PI)*14)-235)*2,0: NEX
T f
```

```
175 PLOT INVERSE 1; PAPER 0; I
NK 6;225,156: DRAW INVERSE 1; I
NK 6; PAPER 0;20,0,1.5: DRAW IN
VERSE 1; PAPER 0; INK 6;-20,0,-.
75
```

```
177 CIRCLE INVERSE 1; INK 6; P
APER 0;232,162,3: PLOT INVERSE
1; INK 6; PAPER 0;233,162
```

```
178 CIRCLE INVERSE 1; INK 6; P
APER 0;238,162,3: PLOT INVERSE
1; INK 6; PAPER 0;237,162
```

```
179 CIRCLE INVERSE 1; INK 6; P
APER 0;235,157,2
```

```
180 PLOT 0,0: FOR f=0 TO 15: PL
OT f,f: DRAW 15-f,0: PLOT 255-f,
-f: DRAW f-15,0: NEXT f
```

```
200 PLOT 0,0: DRAW 48,48: DRAW
159,0: DRAW 48,-48: DRAW 0,140:
DRAW -255,0: DRAW 0,-140
```

```
210 PLOT 48,48: DRAW 0,92: PLOT
207,48: DRAW 0,92: PLOT 16,16:
DRAW 223,0
```

```
220 PLOT 10,10: DRAW 0,130: PLO
T 20,20: DRAW 0,120: PLOT 30,30:
DRAW 0,110: PLOT 40,40: DRAW 0,
100
```

```
230 PLOT 245,10: DRAW 0,130: PL
OT 235,20: DRAW 0,120: PLOT 225,
30: DRAW 0,110: PLOT 215,40: DRA
W 0,100
```

```
240 PLOT 58,48: DRAW -24,-32: P
LOT 68,48: DRAW -14,-32: PLOT 78
48: DRAW -9,-32: PLOT 88,48: DR
AW -5,-32
```

```
250 PLOT 98,48: DRAW -4,-32: PL
OT 108,48: DRAW -3,-32: PLOT 118
48: DRAW -2,-32: PLOT 128,48: D
RAW 0,-32
```

```
260 PLOT 138,48: DRAW 2,-32: PL
OT 148,48: DRAW 3,-32: PLOT 158,
48: DRAW 4,-32: PLOT 168,48: DRA
W 5,-32
```

```
270 PLOT 178,48: DRAW 9,-32: PL
OT 188,48: DRAW 14,-32: PLOT 198
48: DRAW 24,-32
```

```
280 PLOT 48,95: DRAW 159,0: DRA
W 10,-3: DRAW -179,0: DRAW 8,3:
PLOT 38,92: DRAW 0,-2: DRAW 179,
0: DRAW 0,2
```

```
290 PLOT 0,140: DRAW 0,2: DRAW
255,0: DRAW 0,-2
300 FOR f=67 TO 187 STEP 20: CI
RCLE INK 7;f,106,7: NEXT f
K 7;f,106,7: NEXT f
310 PRINT PAPER 0; INK 7;AT 2,
6;"YE OLDE RIFLE RANGE."
```

```
320 PLOT 45,149: DRAW 165,0: DR
AW 0,13: DRAW -165,0: DRAW 0,-13
330 PLOT 80,149: DRAW 0,-6: PLO
T 82,149: DRAW 0,-6: PLOT 175,14
```

```
9: DRAW 0,-6: PLOT 173,149: DRAW
0,-6
340 PLOT 80,142: PLOT 82,142: P
LOT 175,142: PLOT 173,142
```

```
345 PRINT PAPER 2; INK 6;AT 5,
8;"E";AT 6,8;"DE";AT 5,22;"E";AT
6,22;"DE"
```

```
350 PRINT PAPER 7;AT 5,11;"YE
PRIZES.";AT 11,12;"YE SCORE"; PA
PER 0;AT 12,13;"(6*sp)";AT 14,6;
"(20*sp)";AT 15,6;"(20*sp)"
```

```
360 PRINT PAPER 7;AT 0,11;"YE
AMMO "; PAPER 0;"(3*sp)": PRINT
PAPER 0;AT 20,2;"(28*sp)";AT 21
,1;"(30*sp)"
```

```
363 RANDOMIZE USR 60000
365 GO TO 2000
367 BORDER 0
```

```
368 LET sc=0: LET bon=1000: LET
tam=51
369 RANDOMIZE USR 60050
370 LET co=0: LET a=15: LET f=0
: LET x=1: LET am=tam: LET go=10
00
```

```
375 PRINT PAPER 0; INK 6;AT 0,
19;am
380 GO SUB 90
```

```
390 LET f=0: LET am=am-1
400 PRINT PAPER 0; INK 6;AT 0,
19;am;" "
```

```
500 PRINT PAPER 0; INK in;AT 1
4,6;a$;AT 15,6;b$
510 IF INKEY$<>" " THEN LET f=1
: BEEP .01,-10
```

```
520 LET a$a=(2 TO )+a$(1): LET
b$b=(2 TO )+b$(1)
530 PRINT INK 5; PAPER 0;AT 20
,a;"(sp)A(sp)";AT 21,a;"(sp)B(sp)
)"
```

```
540 LET a=a+x
550 IF a<7 THEN LET x=1
560 IF a>23 THEN LET x=-1
570 IF f=1 AND CODE (b$(a-5))>3
2 THEN GO TO 600
```

```
580 IF f=1 THEN LET f=0: LET a
m=am-1
585 IF am=0 THEN GO TO 30000
590 GO TO 400
```

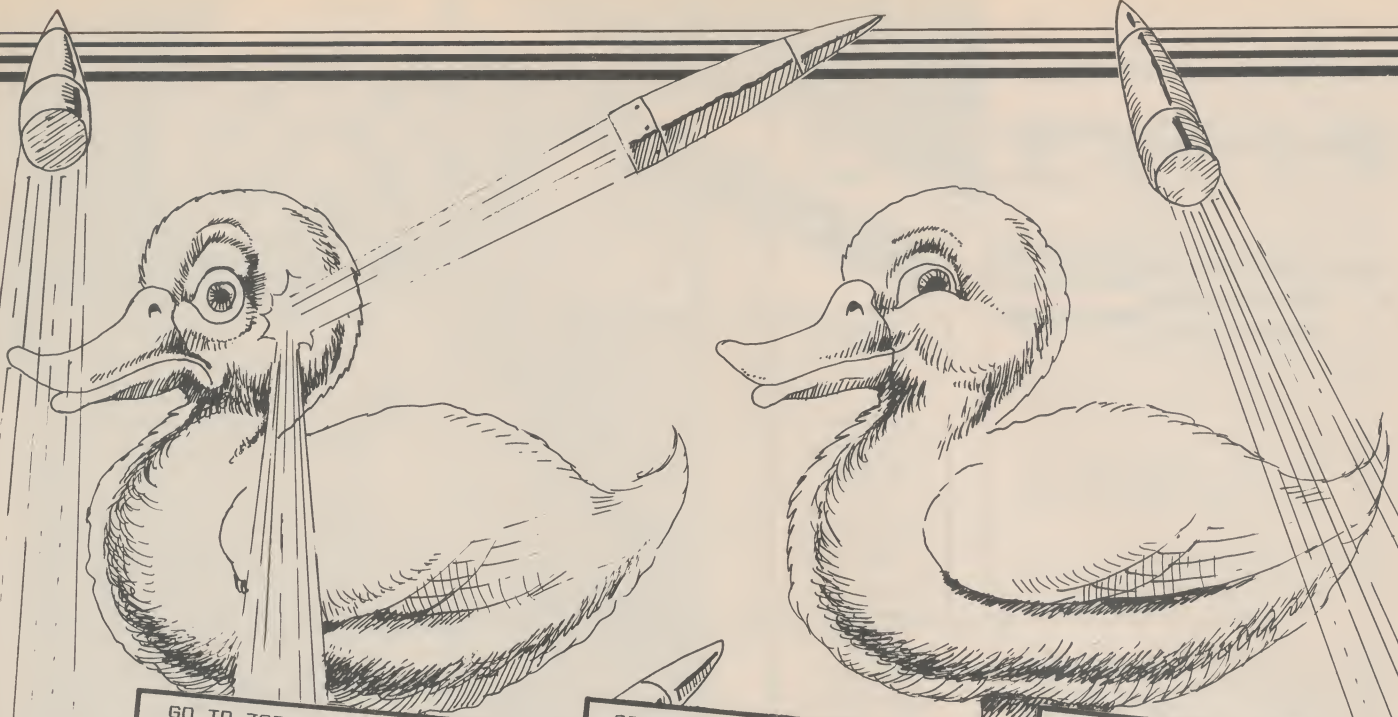
```
600 BEEP .01,20
610 LET co=co+1
620 LET b$(a-5)="(sp)"
630 IF CODE (b$(a-6))>32 THEN
LET b$(a-6)="(sp)"
```

```
640 IF CODE (b$(a-4))>32 THEN
LET b$(a-4)="(sp)"
650 LET a$(a-6 TO a-4)="(3*sp)"
660 LET sc=sc+va: PRINT INK RN
D*6+1; PAPER 0;AT 12,13;sc;"(sp)
"
```

```
670 IF co=5 THEN LET go=go+10:

```





```
GO TO 380
675 IF am=0 THEN GO TO 3000
680 GO TO 580
1000 LET va=100: LET in=6: LET a
$="C(3*sp)C(3*sp)C(3*sp)C(3*sp)C
(3*sp)": LET b$="DE(2*sp)DE(2*sp)
DE(2*sp)DE(2*sp)DE(2*sp)": RETU
RN
1010 LET co=0: LET va=200: LET i
n=7: LET a$="FH(2*sp)FH(2*sp)FH(
2*sp)FH(2*sp)FH(2*sp)": LET b$="
GI(2*sp)GI(2*sp)GI(2*sp)GI(2*sp)
GI(2*sp)": RETURN
1020 LET co=0: LET va=300: LET i
n=4: LET a$="JL(2*sp)JL(2*sp)JL(
2*sp)JL(2*sp)JL(2*sp)": LET b$="
KM(2*sp)KM(2*sp)KM(2*sp)KM(2*sp)
KM(2*sp)": RETURN
1030 LET co=0: LET va=400: LET i
n=5: LET a$="NO(2*sp)NO(2*sp)NO(
2*sp)NO(2*sp)NO(2*sp)": LET b$="
PQ(2*sp)PQ(2*sp)PQ(2*sp)PQ(2*sp)
PQ(2*sp)": RETURN
1040 LET co=0: LET va=500: LET i
n=3: LET a$="RS(2*sp)RS(2*sp)RS(
2*sp)RS(2*sp)RS(2*sp)": LET b$="
TU(2*sp)TU(2*sp)TU(2*sp)TU(2*sp)
TU(2*sp)": RETURN
1050 LET co=0: LET va=600: LET i
n=7: LET a$="RS(2*sp)C(3*sp)FH(2
*sp)JL(2*sp)NO(2*sp)": LET b$="I
U(2*sp)DE(2*sp)GI(2*sp)KM(2*sp)P
Q(2*sp)": RETURN
1060 FOR f=0 TO 10: FOR g=7 TO 0
STEP -1: POKE 59990,g: RANDOMIZ
E USR 60250: BEEP .001,f*2+20: N
EXT g: NEXT f
1065 RANDOMIZE USR 60050: BEEP .
01,20
1070 PRINT AT 20,a;"(2*sp)": AT 2
1,a;"(2*sp)": LET sc=sc+bon: LET
tam=tam-5
1080 IF tam<300 THEN LET sc=sc+1
0000: GO TO 3000
1090 GO TO 370
2000 BORDER 0: PAPER 0: INK 7: C
LS
2001 LET ink=RND*5+1
2005 FOR f=4 TO 5: PRINT INK in
k; AT f,0;"(32*ig6)": AT f+13,0;"(
32*g7)": NEXT f
2010 PRINT INK ink; AT 8,6;"(ig4
,ig7,g7,g2,ig4,g2,ig5,sp,ig4,g2,
sp,ig4,ig7,ig4,ig5,ig1,g5,g5,g3,
g5,g3,11*sp,ig4,ig7,g5,sp,ig4,sp
,ig5,sp,ig4,2*sp,ig4,ig7,ig4,ig5
,ig5,g7,g5,g5,g5,g2,11*sp,g2,g2,
g3,g2,g2,sp,g3,g2,g3,g2,sp,g2,g2
,g2,g2,g2,g1,g1,g3,g1,g3)"
2020 PRINT AT 12,0;"PRESS EITHER
1. FOR INSTRUCTIONS(42*sp)OR 2.
TO PLAY"
```

```
2025 FOR f=0 TO 500
2028 RANDOMIZE USR 60200
2030 IF INKEY$="1" THEN BEEP .0
1,10: GO TO 2060
2040 IF INKEY$="2" THEN BEEP .0
1,10: GO TO 367
2050 NEXT f
2055 CLS : GO TO 3190
2060 CLS : INK 0
2070 PRINT "USE ANY KEY TO SHOOT
AT THE""TARGETS."
2080 PRINT "THE GAME WILL END W
HEN YOU HAVE""NO AMMUNITION LE
FT."
2090 PRINT "IF YOU SHOOT ALL TH
E TARGETS""THEN YOU WILL GET S
OME BONUS""POINTS AND START AG
AIN WITH LESS""AMMUNITION."
2095 PRINT "PRESS ANY KEY." : R
ANDOMIZE USR 60100: BORDER 0
2096 PAUSE 0: CLS
2100 PRINT "WHILST YOU ARE PLAYI
NG THE GAME""YOUR GUN WILL MOV
E BACKWARDS""AND FORWARDS ACRO
SS THE""BOTTOM OF THE SCREEN J
UST TO""MAKE THINGS HARDER."
2110 PRINT "REMEMBER TO ALLOW F
OR THE DELAY""BEFORE THE BULLE
T REACHES THE""TARGET."
2120 PRINT "PRESS ANY KEY."
2125 RANDOMIZE USR 60100: BORDER
0
2130 PAUSE 0: CLS
2140 PRINT "C(3*sp)C(3*sp)C(3*sp)
C(3*sp)C(5*sp)100 POINTS""DE(2
*sp)DE(2*sp)DE(2*sp)DE(2*sp)DE(8
*sp)EACH"
2150 PRINT "FH(2*sp)FH(2*sp)FH(
2*sp)FH(2*sp)FH(4*sp)200 POINTS"
"GI(2*sp)GI(2*sp)GI(2*sp)GI(2*s
p)GI(8*sp)EACH"
2160 PRINT "JL(2*sp)JL(2*sp)JL(
2*sp)JL(2*sp)JL(4*sp)300 POINTS"
"KM(2*sp)KM(2*sp)KM(2*sp)KM(2*s
p)KM(8*sp)EACH"
2170 PRINT "NO(2*sp)NO(2*sp)NO(
2*sp)NO(2*sp)NO(4*sp)400 POINTS"
"PQ(2*sp)PQ(2*sp)PQ(2*sp)PQ(2*s
p)PQ(8*sp)EACH"
2180 PRINT "RS(2*sp)RS(2*sp)RS(
2*sp)RS(2*sp)RS(500 POINTS"
"RU(2*sp)RU(2*sp)RU(2*sp)RU(2*s
p)RU(8*sp)EACH"
2190 PRINT "C(3*sp)FH(2*sp)JL(2
*sp)NO(2*sp)RS(4*sp)600 POINTS"
"DE(2*sp)GI(2*sp)KM(2*sp)PQ(2*sp
)TU(8*sp)EACH"
2200 PRINT "PRESS ANY KEY."
2205 RANDOMIZE USR 60100: BORDER
0
2210 PAUSE 0: INK 7: CLS : GO TO
2001
```

```
3000 FOR f=7 TO 0 STEP -1: POKE
59990,f: RANDOMIZE USR 60250: BE
EP .01,f*2: PAUSE 10: NEXT f: BO
RDER 0: BEEP .2,-20: CLS
3010 IF sc>h(5) THEN GO TO 3050
3020 PRINT FLASH 1; AT 8,8;"YOU
SCORED";sc
3030 PRINT INK 7; AT 16,9;"PRESS
ANY KEY."
3040 PAUSE 0: GO TO 2000
3050 LET h$(5)="" : PRINT "(5*sp)
PLEASE ENTER YOUR NAME"
3051 PRINT AT 10,10;"(-----
) ": PRINT AT 15,8;"YOU SCORED ";
sc
3052 LET g=1
3054 PAUSE 0
3056 LET 1$=INKEY$: BEEP .005,10
3058 IF 1$=CHR$ 13 THEN GO TO 3
080
3059 IF g>1 AND 1$=CHR$ 12 THEN
LET h$(5,g)="" : PRINT CHR$ 8;"-
";CHR$ 8; LET g=g-1: GO TO 3054
3060 LET h$(5,g)=1$
3062 PRINT AT 10,g+10;1$;
3064 LET g=g+1
3066 IF g<11 THEN GO TO 3054
3080 CLS
3100 LET h(5)=sc
3110 LET zx=4
3120 FOR f=1 TO zx
3130 IF h(f)>h(f+1) THEN GO TO
3160
3140 LET v=h(f): LET h(f)=h(f+1)
: LET h(f+1)=v
3150 LET v$=h$(f): LET h$(f)=h$(
f+1): LET h$(f+1)=v$
3160 NEXT f
3170 LET zx=zx-1
3180 IF zx>0 THEN GO TO 3120
3190 PRINT AT 0,2: INK RND*6+1;"
(ig5,ig5,ig4,g2,sp,ig5,ig5,ig4,i
g5,ig5,sp,ig5,2*sp,ig4,ig5,ig4,i
g4,g2,ig4,ig5,ig4,ig4,ig5,
ig4,g2,4*sp,g7,g2,ig4,2*sp,ig4,i
g5,ig4,ig5,ig5,sp,ig5,2*sp,ig5,i
g5,ig4,2*sp,ig4,sp,ig4,ig5,ig5,i
g5,ig5,ig4,5*sp,g1,sp,g3,g2,sp,g
2,g2,g2,g3,g2,g3,g2,sp,g3,g2,
g2,sp,sp,g2,sp,sp,g2,g2,g2,g2,g3
,g2)"
3200 FOR f=1 TO 5: PRINT INK f+
2; AT (f*2)+3,0;f;" ----- "h$(
f); AT (f*2)+3,21;" ---- "h(f):
NEXT f
3400 PRINT AT 18,5;"(4*sp)PRESS
ANY KEY. (4*sp)"
3405 FOR f=0 TO 1000
3410 IF INKEY$<>"" THEN GO TO 3
65
3420 NEXT f: GO TO 2000
```

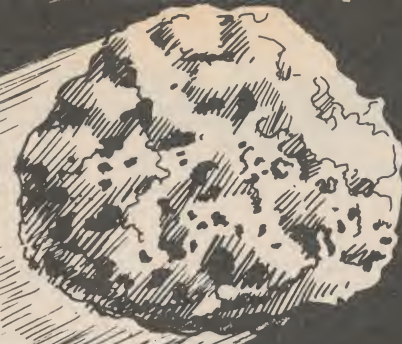


```

1 REM E-RND? TAN
2 REM ***** METEORS *****
3 REM *** (C) TIM MARTIN ***
4 REM ***** 15-2-1985 *****
5 GOTO 9005
6 GOSUB 10
7 GOTO 55
8 POKE 16418,0
9 FOR N=1 TO 23
10 PRINT AT N,0:
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30 PRINT AT N,0:
31
32
33
34
35
36
37
38
39
40 NEXT N
41 PRINT AT 0,0: " SCORE:00000
42 HI SCORE:00000 " AT 0,30-LEN
43 H$;H$;AT 0,13-LEN S$;S$
44 50 PRINT AT 21,0:
45
46
47
48
49
50
51 PRINT AT 22,0: "000000000000
52 PRINT AT 19,0:
53 PRINT AT 20,0:
54 PRINT AT 18,15: "
55 RETURN
56 LET A=17
57 LET B=15
58 LET C=0
59 LET D=15
60 LET E=15
61 LET F=15
62 LET G=1
63 LET H=INT (RND*27)+2
64 PRINT AT X,Y:
65 LET Y=Y+(RND*.5 AND Y<30)-(
66 RND*.5 AND Y>1)
67 LET X=X+1
68 PRINT AT X,Y:
69 LET P=USR 16514
70 PRINT "
71 IF P=0 THEN PRINT AT X,Y:
72
73 IF P=3 THEN PRINT AT X,Y:
74
75 IF X=22 OR P=166 THEN GOTO
76
77 IF P<128 AND P>10 AND P>3
78 THEN PRINT AT X,Y:
79 PRINT AT C,0:
80 LET C=C+2*(INKEY$="5")-2*(I
81 NKEY$="7")
82 IF C<1 THEN LET C=1
83 IF C>17 THEN LET C=17
84 LET D=D+2*(INKEY$="8")-2*(I
85 NKEY$="5")
86 IF D<30 THEN LET D=30
87 IF D>1 THEN LET D=1
88 PRINT AT C,0:
89 IF INKEY$="0" THEN GOSUB 50
90
91 IF P=128 OR P=169 THEN GOTO
92
93 GOTO 100
94 LET E=C-A
95 LET F=D-B
96 LET M=ABS E
97 IF ABS F>M THEN LET M=ABS F

```

# meteors



**P**ROTECT THE EARTH from the terrifying meteor storm in **Meteors** by Tim Martin of Reading, Berkshire. The game, for the 16K ZX-81, requires you to move your gunsight about the screen to accurately blast the meteors. If the meteors gouge a big enough crater in the earth, they will penetrate the crust and it's curtains for civilisation as we know it.

The short machine-code routine in line 1 is identical to that used in **Manhattan Caper** printed elsewhere in Program Printout. Please read the instructions for that program before attempting to enter **Meteors**, or the program will not work properly.

```

540 FOR G=0 TO M-1
550 PRINT AT A+G*E/M,B+G*F/M,
560 LET P=USR 16514
570 PRINT "
580 IF P=CODE "0" THEN GOTO 700
590 PRINT AT A+G*E/M,B+G*F/M:
600
610 NEXT G
620 LET Z=0
630 RETURN
640 PRINT AT X,Y:
650 LET S$=STR$ (VAL (S$)+10)
660 LET Z=0
670 PRINT AT 0,13-LEN S$:S$
680 GOTO 100
690 PRINT AT X,Y: "BOOM...."
700 IF S$>H$ THEN LET H$=S$
710 PRINT AT 0,30-LEN H$:H$
720 FOR K=1 TO 100
730 NEXT K
740 GOTO 9010
750 STOP
760 SAVE "METEORS"
770 LET H$="0"
780
790 LET S$="0"
800 GOSUB 10
810 PRINT AT 17,16: " BASE" A
820 T 16,17: "YOUR MISSILE"
830 PRINT AT 15,7: "AT 15,8:"
840 AT 14,9: "BOOM"
850 PRINT AT 21,4: "AT 20,5:"
860 AT 19,6: "CRATER"
870 PRINT AT 21,19: "AT 20,20:"
880 AT 19,21: "REACTORS"
890 PRINT AT 10,10: "X" AT 9,11:
900 AT 8,12: "YOUR SIGHT"
910 PRINT AT 12,12: "AT 11,13:"
920 AT 10,14: "YOUR MISSILE"
930 PRINT AT 1,12: "METEORS"
940 PRINT AT 2,11:
950 PRINT AT 3,0: "YOU GUIDE YO
960 UR SIGHT WITH KEYS "5" "8" "7" A
970 "0" "0" TO FIRE."
980 PRINT AT 5,1: "PRESS AN
990 Y KEY TO PLAY"
1000 IF INKEY$=" " THEN GOTO 9110
1010 LET S$="0"
1020 GOTO 8

```

# Vignere Cipher

TOP  
SECRET

TOP  
SECRET

TOP  
SECRET

TOP  
SECRET

TOP  
SECRET

## Encode

```

5 PRINT AT 1,1: "CAPITAL LTTER
S NO SPACES"
10 INPUT "keyword "; LINE k$
15 PRINT AT 3,1:k$
20 INPUT "message "; LINE m$
25 PRINT AT 5,1:m$
30 LET s=LEN m$
40 LET h$=k$
50 LET h$=h$+k$
55 IF LEN h$<s THEN GO TO 50
60 DIM a(s): DIM b(s)
65 DIM c(s)
70 FOR n=1 TO s
75 LET a(n)=CODE m$(n)
80 LET b(n)=CODE h$(n)
90 LET c(n)=a(n)+b(n)
100 NEXT n
110 FOR n=1 TO s
120 IF c(n)<=155 THEN PRINT AT
7,n;CHR$ (c(n)-65)
130 IF c(n)>155 THEN PRINT AT
7,n;CHR$ (c(n)-91)
140 NEXT n

```

**A**LL THE BEST spies must have a code, and one of the traditional favourites used to be the Vignere Cipher. The Vignere uses a keyword and sliding alphabets, so that each letter is coded in a new code. That makes it difficult to crack.

T S Thomas of Kidwell, Dyfed, has written routines for any Spectrum to write and read Vignere cipher. You must enter the keyword first, and then the message. The message should be entered in blocks of 31 characters at a time or less, and you should only use capital letters, with no spaces between words.

## Decode

```

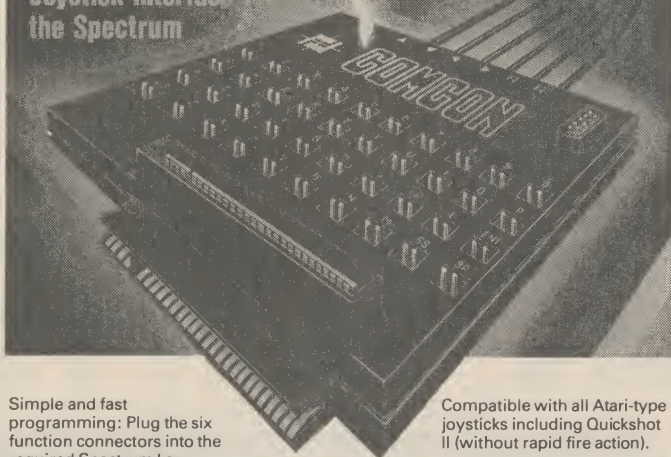
5 PRINT AT 1,1: "CAPITAL LETTE
RS NO SPACES"
10 INPUT "keyword "; LINE k$
15 PRINT AT 3,1:k$
20 INPUT "message "; LINE m$
25 PRINT AT 5,1:m$
30 LET s=LEN m$
40 LET h$=k$
50 LET h$=h$+k$
55 IF LEN h$<s THEN GO TO 50
60 DIM a(s): DIM b(s)
65 DIM c(s)
70 FOR n=1 TO s
75 LET a(n)=CODE m$(n)
80 LET b(n)=CODE h$(n)
90 LET c(n)=a(n)-b(n)
100 NEXT n
110 FOR n=1 TO s
120 IF c(n)<0 THEN PRINT AT 7,
n;CHR$ (c(n)+91)
130 IF c(n)>=0 THEN PRINT AT 7,
n;CHR$ (c(n)+65)
140 NEXT n

```



# COMCON

Programmable Joystick Interface for the Spectrum



Simple and fast programming: Plug the six function connectors into the required Spectrum key positions - Ready!

Supports joysticks with two independent fire actions: Photon Blasters and Neutron Bombs at the touch of your fingertips.

Extension port for combined use of peripherals.

Compatible with all Atari-type joysticks including Quickshot II (without rapid fire action).

Interface operates joystick parallel to keyboard. Joystick action compatible with any add-ons including microdrives.

Select key functions anytime - even when the game is already loaded.

**£19.95**

incl. VAT and P & P

## NEW COMCON TWIN JOYSTICK INTERFACE

**£22.95**

incl. VAT and P&P

Two port version allows connection of two joysticks for sequential two player games using same key positions (non-independent!)

**QUICKSHOT 2+2 JOYSTICK**  
modified to incorporate 2 independent fire actions and no rapid fire option

**£13.95**

incl. VAT and P&P

**FLIGHTLINK HOTSHOT JOYSTICK**  
with two independent fire actions

**£10.50**

incl. VAT and P&P

**CURRAH USPEECH UNIT**  
fits into COMCON extension slot

**£21.95**

incl. VAT and P&P

ALSO AVAILABLE FROM SELECTED RETAIL OUTLETS

Send to:

**FREL LTD.** 1 Hockeys Mill, Temeside, Ludlow, Shropshire SY8 1PD

Mr./Mrs./Miss:

Address:

Postcode:

Qty	Code	Item	Item Price	Total £
	01	Comcon Interface	£19.95	
	02	Comcon Twin Interface	£22.95	
	03	Quickshot 2+2 Joystick	£13.95	
	04	Flightlink Hotshot Joystick	£10.50	
	05	Currah uSpeech Unit	£21.95	
	06	Comcon with Quickshot 2-2	£31.90	
	07	Comcon with Hotshot	£28.45	

I enclose a cheque/postal order made payable to Frel Ltd. for: £

# O'LEVELS

not just revision but also tuition for the Spectrum 48K

## Mathematics

8 programs TOTAL 150K

Fractions, square roots, decimals, logarithms, areas, sets, accuracy, bases, interest, volumes, indices, standard form, modulo, number set, pie charts, histograms, simultaneous equations, bar charts, averages, probability, algebraic laws, quadratics, matrices, vectors, transformational geometry, trigonometry, differentiation, integration, factors, angles.

## Physics

7 programs TOTAL 140K

Reflection, wavelength and frequency, refraction, lenses, the eye and its defects, diffraction, colour, magnetism, motors, Ohm's law, amps, volts, series, parallel, electronics, heat, gas laws, energy forms, specific heat, kinetic energy, half-lives, atomic structure, radiation, isotopes, Newton's laws.

## Biology

6 programs TOTAL 120K

Plant and animal cells, genetics, inheritance, reproduction in man, asexual and sexual reproduction, flowering plants, photosynthesis, osmosis, transpiration, transport, bacteria food classes, diet, alimentary canal, respiration, excretion, eye, skin, nervous system, ecosystem, food cycles, fungi, earthworm, amphibians, birds, mammals, response.

## Computer Studies

7 programs TOTAL 140K

Data collection, coding, storage, processing, presentation, validation, d.p. systems, privacy, security, hardware, I/O devices, software, low and high level languages, machine-code, assemblers, interpreters, compilers, errors in programming, aids to debugging, microcode, machine organisation.

## Chemistry

8 programs TOTAL 150K

Matter states, action of heat and electricity, reaction with air, water, acids, alkalis, halogens, oxygen, sulphur, nitrogen, phosphorus, carbon, hydrogen, alkali metals, alkaline earth metals, transition metals, organic chemistry, atoms, formulae, molar mass, equations, ions, periodic table, bonding, gases, metal extraction, polymers, fertilizers.

## French

8 programs TOTAL 160K

Regular and irregular verbs, reflexives, indicative, subjunctive, passive, infinitive, agreement, pronouns, definite, indefinite and partitive articles, single and compound nouns, adjectives and their forms, adverb phrases, comparatives and superlatives, conjunctions, prepositions, idioms, measurements.

## Electronics

8 programs TOTAL 150K

Energy and its sources, power distribution, e.m.f. p.d., charge, current power, r.m.s. values, resistors, series and parallel, capacitors, time constants, inductors, transformers, resonance, microphones, loudspeakers, heat and light sensitive devices, diodes, transistors, logic circuits, multivibrators, meters, CRO, amplifiers, feedback.

**SPECIAL OFFER FOR THIS MONTH!**  
Each subject ONLY £4.95 inc. p/p.

## English Language

8 programs TOTAL 160K

Composition, Narration, description, discursion, letterform, transaction, expression, emphasis, sentence construction, paragraph, punctuation, argument, awareness of context, idioms, inference, summarising.

## German

8 programs TOTAL 160K

Strong, weak, reflexive and mixed verbs, singular and plural, indicative active and passive, subjunctives, imperatives, infinitives, accusative and dative, articles, nouns, pronouns, adjectives, adverbs, conjunctions, prepositions, numbers, time, quantity, idioms, word order.

## Economics

8 programs TOTAL 180K

Price level forces, changes in output, employment and growth, revenue and expenditure, financial institutions, international trading, population and its structure, market forces, supply and demand, price formation, industrial location, scale and forms of enterprise, mixed economy.

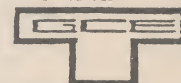
# LOGO, FORTH PASCAL & C

Teaching versions of these languages, including a full text editor (screen editor) and a 48 page tutorial manual. Saving and loading of programs is a screen editor function. Trace facilities are provided for easy tuition and debugging. Availability: Pascal now, C now, Logo soon, Forth soon.

1 program Each 30K

**SPECIAL OFFER FOR THIS MONTH**  
Each language only £4.95 inc. p/p.

**GCE TUTORING**  
quality educational software



40 BRIMMER HILL, WIDMER END, HIGH WYCOMBE, BUCKS HP15 6NP

Please send me: .....

My name and address: .....

My computer is a: .....

I enclose a cheque/PO for £ .....  
Made payable to GCE Tutoring

SU7



# SUPER-LEAGUE<sup>®</sup>

For use on  
48K  
SPECTRUM

Acclaimed the best football simulation game....

"...after using it for several days I had to write and congratulate you on a really excellent program." - A.M. (Middlesex)

"The program is addictive. Last night I spent from 11.00a.m. to 11.30p.m. taking Leeds to win the championship by 1 point." - I.B. (Shropshire)

"I must congratulate you on an outstanding game well worth every penny. Thank you." - S.S. (Essex)

"My son and grandson in Australia are delighted...a gem...neither of them have stopped playing it. Thanks for a great game." - N.C. (West Sussex)

"I thought I should write because of your excellent game." - Mr. McD. (W. Mids)

Note the following true-to-life features....

● Full 11-a-side match action

● On-screen commentary showing current score, name of player in possession, time played

● Scale 90-minute game

● Individual player skills

● Full 22-team League

● 42-match season

● League table and results on screen and printer

● Save season to date on tape

● Also form any league of 22 teams and pick your own players!

	W	D	L	F	A	Pts
1 Ipswich T.	16	8	8	41	28	54
2 Liverpool	16	8	8	41	31	53
3 Nottingham	13	9	10	45	35	45
4 West Ham	13	9	10	45	35	45
5 Southampton	13	9	10	45	35	45
6 Leicester	13	9	10	45	35	45
7 Tottenham	13	9	10	45	35	45
8 Wolves	13	9	10	45	35	45
9 Sunderland	13	9	10	45	35	45
10 Q.P.R.	13	9	10	45	35	45
11 Watford	13	9	10	45	35	45
12 Everton	13	9	10	45	35	45
13 Notts	13	9	10	45	35	45
14 Norwich	13	9	10	45	35	45
15 Coventry	13	9	10	45	35	45
16 Aston U.	13	9	10	45	35	45
17 Man. Uni.	13	9	10	45	35	45
18 Luton T.	13	9	10	45	35	45
19 U.S.A.	13	9	10	45	35	45
20 Arsenal	13	9	10	45	35	45
21 Stoke C.	13	9	10	45	35	45

£6.50

(inc. p. & p.)

direct from

CROSS SOFTWARE

72 Swanshope,

Burney Drive,

Loughton, Essex, IG10 2NB

CROSS

SOFTWARE

72 Swanshope,

Burney Drive,

Loughton,

Also available from selected stores in the London area (including VIRGIN GAMES CENTRE, Oxford Street, W.1)

## RSD Connections Ltd

MONITOR LEADS		RIBBON CABLE (Price per ft)		SPECTRUM EXTENSION LEADS	
BBC to Microvitec	£2.20	Grey Rainbow		6 inch extension cable	£10.50
TV to Computer	£1.25	9-way	.13	M to F	£14.75
Green Screen	£2.95	10-way	.15	6 inch F to 2M's	
BBC to Fidelity etc.	£4.95	14-way	.18	12 inch extension cable	£10.75
QL to Fidelity etc.	£4.95	15-way	.20	M to F	
Commodore to Fidelity	£4.95	16-way	.22		
Phono to Phone	£1.25	20-way	.30		
BBC to Ferguson	£2.50	24-way	.36		
QL to Microvitec	£2.50	25-way	.40		
QL to mono monitor	£1.50	26-way	.45		
BBC to Sony/Kaga	£5.95	34-way	.60		
BNC to BNC	£2.95	37-way	.65		
Commodore to Ferguson	£2.50	50-way	.70		
BBC to Hitachi	£2.50	50-way	.95		
SONY to Fidelity etc.	£6.50	60-way	£1.10		
MSX to Ferguson	£2.50	64-way	£1.15		
QL to Ferguson	£2.50				

EDGE CONNECTORS		SPECTRUM DIVERS	
2 x 23-way (ZX-81)	£1.85	RS232 WAFA lead 1m.	£10.50
2 x 28-way (Spectrum)	£2.10	Centronics WAFA lead 1m.	£10.50
DOUBLE SIDED PLUG BOARDS		Micro Extn. lead 12"	£6.00
ZX-81 23-way	£1.25		
Spectrum 28-way	£1.50		
DISK DRIVE LEADS		IDC D CONNECTORS	
DD drive power lead	£4.50	9-way	£2.70
DD drive lead 1m.	£10.25	15-way	£3.20
SD drive power lead	£2.75	25-way	£3.70
SD drive lead 1m.	£7.25	37-way	£4.45
Disk drive extn. lead 1m.	£7.25		
CASSETTE LEADS		TELEPHONE CONNS	
BBC to cassette	£2.25	Surface master	£3.75
Dragon to cassette	£2.20	jack socket	£2.50
Spectrum to cassette	£1.25	Surface extn socket	£4.25
BBC to Acorn cassette	£2.25	Dual outlet adaptor	£1.85
PRINTER LEADS		Line jack cord 3 mtr	£1.85
ALL 1 METRE LENGTH		4 core cable per metre	48p
BBC	£9.95	All surface units shuttered BT approved.	
BBC serial	£8.95	CONNECTORS IDC	
AMSTRAD	£16.75	Card Edge	£0.85
MEMOTECH	£12.75	Trans 2 Row	£0.80
EINSTEIN	£12.75	PCB Socket	£0.80
IBM PC	£15.75	10-way	£1.20
SPECTRUM interface	£9.75	14-way	£1.20
to RS 232	£15.25	16-way	£1.60
ATARI	£13.95	20-way	£1.90
MSX	£15.20	25-way	£2.40
APRICOT	£9.95	26-way	£2.40
DRAGON	£9.75	34-way	£3.10
QL	£10.75	40-way	£3.40
ANY COMBINATION OF LEADS MADE TO ORDER		50-way	£3.85
		60-way	£4.80

TRADE ENQUIRIES WELCOME

75p. P&P IN UK. Access & Visa accepted. Add 15% VAT to all orders

Cheques made payable to

RSD Connections Ltd, Dept SU6.

PO Box 1, Ware, Herts.

Tel: 0920 5285

## NEW — FROM TALENT!

### GRAPHIQL

Create superb colour pictures on your QL with TALENT's outstanding new graphics package. It's supplied on two microdrives — the first holds the master program and a printer dump utility, the second, three demonstration pictures. Backup copies can be made. GRAPHIQL comes with a detailed, clearly-written instruction manual, outlining the program's many facilities.

Features include:

- Freehand drawing, 8 colours, optional flash
- Rubber banding, rubber boxes, even rubber circles and ellipses
- Variable size texture definition
- Doodle pad
- Colour and texture fill of any shaped area
- User-definable paint brush — any colour or width
- Colour list for full colour control
- Re-colour facility
- Magnification with panning
- Mirroring and rotation of blocks of screen
- Air-brush effect
- On-line 'help' facility
- Full file-store access
- Printer dump utility

Text can be included in pictures. The characters can be single or double height with flash and underline.

GRAPHIQL pictures can be put into BASIC or assembler programs with the sample routines provided.

Available in March by mail order direct from:

**£34.95**  
+ 50p postage & packing

## TALENT

COMPUTER SYSTEMS

Curran Building,

101 St. James Road, Glasgow G4 0NS

Tel: 041-552 2128 (24-hour Credit Card Hot-Line)

SOFTWARE FROM SCOTLAND



**T**HIS SERIES has introduced techniques you can use to build intelligent adventures.

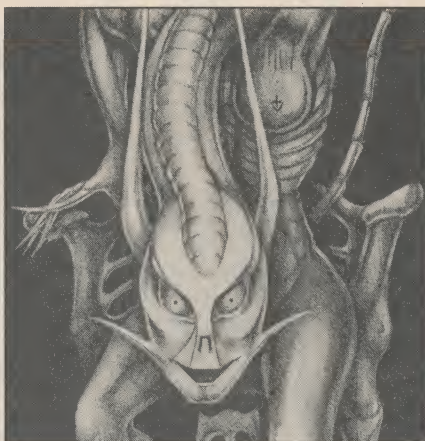
We have looked at the task of setting up scenarios, giving characters life so that the computer can make decisions for those which it controls, and we have shown how the player and character can interact effectively.

The production of AI on the computer is more a case of hard slog by the machine than magic. We are, after all, talking about artificial intelligence and not 'conscious', or 'real', intelligence.

The series has dealt with a variety of techniques, all of which can be combined to create an AI adventure:

**Scenario creation** (February, *Sinclair User*) – the creation of a network of locations using routines to duplicate areas, such as sea or wilderness. All locations use a matrix system – for instance, a Basic two dimensional array. The name of the location is put into the array and used to access locations by line number.

**Player and non-player character attributes** (March) – the attributes of characteristics such as anger, love and



John Gilbert delivers  
the final blow

## A key to a better adventure

hatred using a point system. A negative attribute (–) means the relative lack or opposite of a characteristic and a positive attribute (+) the existence of such a characteristic. Those are put into an attribute variable bank for each character.

**Player/non-player interaction** (April) – during the interaction of characters in, say, a fight scene the numeric characteristics change as the character develops.

**One key movement and command** (May) – a routine which scans the keyboard for a one key input which is either a direction or command, as opposed to sentence input.

**English sentence parsing** (June) – the computer searches through input commands for key words which describe the action.

In this, the last, article of the series we have produced a listing which puts into practice the techniques which we have covered. If you have missed part of the series you should find what you need in listing A.

For easy reference we have included  
*continued on page 90*

### Listing A

```
1 GO TO 10
2 DELETE mdv1_adprog
3 SAVE mdv1_adprog
4 STOP
10 REMark The Crysan Clock
20 REMark for 48K Spectrum or QL
   (mode 8)
30 CLS
40 PRINT "LEAVING MORRIS ON BOARD THE"
50 PRINT "LAUNCH KAGAN AND MARLA DIVE"
60 PRINT "INTO THE SEA IN SEARCH OF"
70 PRINT "THE STOLEN YACHT AND THE CRYSAN"
80 PRINT "CLOCK"
90 REMark ENTRY INTO THE WATER AND ENCOUNTER WITH THE TWO MONSTERS GHENGIS AND BOREEL. (SEE ISSUE MARCH 1985)
100 REMark THE ROUTINE GIVES MARLA AND KAGAN SOME CHARACTER ATTRIBUTES AND FROM THOSE WORKS OUT WHETHER THEY WILL FIGHT THE MONSTERS.
110 REMark IN YOUR OWN PROGRAM HOWEVER THE ATTRIBUTES WILL CONSTANTLY CHANGE AS THE CHARACTERS INTERACT WITH OTHER INHABITANTS AND SITUATIONS WITHIN THE ADVENTURE
120 REMark
130 LET C$="": LET P$="": LET N$=""
140 REMark SET UP ATTRIBUTES
150 DIM a(4,6): REMark attribute bank
160 RESTORE
170 FOR k = 1 TO 4
180 FOR M = 1 TO 6
190 READ a(k,M)
200 NEXT M
210 NEXT k
220 REMark data for attributes
230 DATA 5,4,3,7,6,6
240 DATA -2,-1,2,6,-5,-6
```

```
250 DATA -3,6,4,6,7,3
260 DATA 2,-3,4,6,4,6
270 REMark scenario set up
280 PAUSE 70
290 CLS
300 PRINT "The murky water clears as you"
310 PRINT "and Marla travel downward"
320 PRINT "towards the dark shadows which"
330 PRINT "mask the yacht which you have"
340 PRINT "picked up on your scanner."
350 REMark
360 REMark set up the monsters in a scenario
370 IF a(3,2) OR a(3,3) OR a(3,5) < -1 THEN LET C$="Boreel"
380 LET f$="one creature guards"
390 GO TO 460
400 IF a(4,2) OR a(4,3) OR a(4,5) < -1 THEN LET C$="Ghengis"
410 LET f$="one creature guards"
420 GO TO 460
430 IF C$="" THEN PRINT "The yacht looms before you its"
440 PRINT "open door inviting you in."
450 GO TO 520
460 REMark
470 REMark print the monster/character set-up
480 PRINT "Soon the yacht looms menacingly"
490 PRINT "in the darkness."
500 PRINT f$; " the doorway."
510 GO TO 560
520 PRINT "You pass into the darkness beyond"
530 PRINT "the doorway."
540 STOP
550 REMark
560 REMark fight starts here
570 IF a(1,2) AND a(1,3) AND a(1,5) < -8 THEN LET P$="Marla": LET N$="Kagan": GO TO 610
```

```
580 IF a(2,2) AND a(2,3) AND a(2,5) < -8 THEN LET P$="Kagan": LET N$="Marla": GO TO 610
590 LET P$="Kagan and Marla"
600 STOP
610 PRINT "The thought of a fight chills ";N$;"s"
620 PRINT "blood."
630 PRINT "He swims upward, back to the surface,"
640 PRINT "leaving ";P$;" to face the foe."
650 STOP
660 REMark
670 REMark fight routine
680 PAUSE 70
690 IF P$="Kagan and Marla" THEN LET q$="adventurers": LET z$="adventurers": GO TO 710
700 LET P$="adventurer": LET z$="decides"
710 CLS
720 PRINT "The ";P$;" ";z$;" to go on."
730 REMark lead in to fight (see issue April 1985)
740 LET N$=""
750 RESTORE 820
760 DIM c(4,6)
770 FOR k = 1 TO 4
780 FOR M = 1 TO 6
790 READ c(k,M)
800 NEXT M
810 NEXT k
820 DATA 5,3,7,9,4,3
830 DATA 9,2,-4,9,-3,4
840 DATA 9,7,-2,-7,7,-3
850 DATA 6,7,-3,-7,5,-3
860 IF c(1,5) < -9 THEN PRINT "Kagan can go on no longer": LET N$="Kagan": GO SUB 1020
870 IF c(2,5) < -9 THEN PRINT "Marla can go on no longer": LET N$="Marla": GO SUB 1020
880 LET g$=""
890 IF c(3,5) < -9 OR c(4,5) < -9 THEN GO SUB 1090
900 IF g$="stop" THEN STOP
910 IF c(1,2) < c(3,2) AND c(1,3)
```



# Adventure Programming

continued from page 89

notes on the subroutines in figure one.

The issue of *Sinclair User* in which further information about specific routines can be found has been included within the program listing, which also contains information about what is happening in subroutines within REM statements.

As stated at the beginning of the series, the power of the AI techniques cannot be appreciated in Basic. The reason for writing them in such a slow and easy language is that they will be

available to a wider audience than if they were written in Pascal or machine code. Try converting them into your particular pet language and you can start getting near to the excellence of

**The Hobbit or Sherlock.**

All it takes is a little bit of imagination and work. Who knows what sort of intelligent adventure worlds you can create?

Figure 1. Subroutines	
10-110	storyline update
120-350	set up initial control variables
360-460	set up the monster variables for Boreel and Ghengis
470-540	set up monsters in scenario
560-1120	fight scenario between heroes and monsters. This depends upon which characters are present and the values within the attribute bank
1140-1300	set up the objects available in scenario and allow characters to pick them up
1320-1670	one-key movement routine
1690-2330	'english' sentence parser. Will decipher SAY TO and TAKE but can be easily extended

## Listing A continued

```

> c(3,3) AND c(1,5) < c(3,5) AND
  c(1,6) < c(3,6) THEN LET c(1,2)
=c(1,2)+1: LET c(1,5)=c(1,5)-1
920 GO TO 1020
930 LET c(3,2)=c(3,2)+1
940 LET c(1,5)=c(1,5)-1
950 IF c(2,2) < c(4,2) AND c(2,3)
> c(4,3) AND c(2,5) < c(4,5) A
ND c(2,6) < c(3,6) THEN LET c(2,
2)=c(2,2)+1
960 LET c(2,5)=c(2,5)-1
970 LET c(2,6)=c(2,6)-1
980 GO TO 1020
990 LET c(4,2)=c(4,2)+1: LET c(4
,5)=c(4,5)-1
1000 LET c(4,6)=c(4,6)-1
1010 GO TO 280
1020 REMark monsters kill charac
ters
1030 IF c(3,5) > 4 AND c(3,6) > 5
AND c(3,6) > 4 THEN PRINT "Bore
el finishes off "; N$
1040 LET N$=N$+"X"
1050 IF c(4,3) > 4 AND c(4,4) >
5 AND c(4,6) > 4 THEN PRINT "Ghe
ngis kills "; N$: LET N$=N$+"X"
1060 IF N$="KaganX" THEN LET c(2
,1)=c(2,1)-2: LET c(2,2)=c(2,2)+
2
1070 IF N$="MarlaX" THEN LET c(
1,1)=c(1,1)-2: LET c(1,2)=c(1,2)
+2
1080 RETURN
1090 REMark monsters are killed
1100 IF c(3,5) < -9 THEN PRINT "
Boreel is dead"
1110 IF c(4,5) < -9 THEN PRINT "
Ghengis is dead": LET g$="stop"
1120 RETURN
1130 REMark
1140 REMark pick up object subro
utine. Enter the object, weapon
or monster of your choice and t
he computer will recognise it fo
r what it is
1150 LET B$="*wsw*o*orb*orope*mG
hengiis*mBoreel": REMark w=weapo
n, o=object, m=monster
1160 INPUT a$
1170 LET C$=a$(1 TO 3)
1180 LET k=1
1190 IF B$(k)="" THEN GO TO 123
0
1200 IF k=LEN(B$) THEN PRINT "No
t found": GO TO 1160
1210 LET k=k+1
1220 GO TO 1190
1230 LET M=k+2
1240 LET c=M+2
1250 IF C$=B$(M TO c) THEN GO TO
120
1260 GO TO 1210
1270 IF B$(k+1)="w" THEN PRINT a
$;";"; "You have found a weapon.
"
1280 IF B$(k+1)="o" THEN PRINT a
$;";"; "You have found an object
."

```

```

1290 IF B$(k+1)="m" THEN PRINT a
$;";"; "A monster stands before
you."
1300 GO TO 1160
1310 REMark
1320 REMark this routine impleme
nts a one character input routin
e for (n)orth, (s)outh, (e)ast,
(w)est, (u)p and (d)own (See iss
ue May 1985)
1330 LET o$="sword": LET i$=""
1340 PAUSE 0: LET a$=INKEY$: IF
a$="" THEN GO TO 1340
1350 IF a$="g" THEN GO TO 1390
1360 IF a$="t" THEN GO TO 1440
1370 PRINT#0; "I can't do that"
1380 GO TO 1340
1390 LET n=0: LET d=0: LET s=400
0: LET u=4050: LET w=5000: LET e
=5050
1400 GO SUB 1520
1410 IF b=0 THEN PRINT "You can'
t move in that direction"
1420 GO TO 1340
1430 GO TO b
1440 INPUT "Take what "; a$
1450 IF o$="" THEN PRINT "There
are no objects here to pick up."
1460 GO TO 1340
1470 IF a$ <> o$ THEN PRINT "Tha
t's not here."
1480 GO TO 1340
1490 PRINT "Taking the "; o$
1500 LET i$=i$+"*"+o$
1510 GO TO 1340
1520 INPUT "Where to "; B$: LET B
$=B$(1)
1530 IF B$="n" THEN LET b=n
1540 IF B$="s" THEN LET b=s
1550 IF B$="e" THEN LET b=e
1560 IF B$="w" THEN LET b=w
1570 IF B$="u" THEN LET b=u
1580 IF B$="d" THEN LET b=d
1590 RETURN
1600 CLS: PRINT "You are in the
throne room": PRINT "A huge thro
ne, upon which a vast": PRINT "c
reature rests its glistening lim
bs,": PRINT "dominates the hall.
"
1610 GO TO 1340
1620 CLS: PRINT "You push the Ke
lrosians back and": PRINT "race
up the damp stairs only to be":
PRINT "confronted by an abyss. I
t looks as": PRINT "if you've ha
d your fish and chips."
1630 GO TO 1340
1640 CLS: PRINT "You race toward
s the exit hotly": PRINT "pursue
d."
1650 GO TO 1340
1660 CLS: PRINT "You race to the
door but are": PRINT "are tripp
ed. You fall heavily."
1670 GO TO 1340
1680 REMark
1690 REMark a routine to deciphe
r English sentences is necessary
in an AI adventure so the routi

```

```

ne follows. It is documented so
you can see what is going on an
d how to change it for you own
needs.
1700 REMark At the moment it sup
ports the SAY TO character and G
O types of instruction.
2000 CLS
2010 REMark ENTER INSTRUCTION
2020 PAUSE 70: CLS: INPUT a$
2030 REMark START OF MAIN LOOP T
O SEE WHICH TYPE OF COMMAND IS I
N OPERATION
2040 FOR k = 1 TO LEN(a$)
2050 REMark G=GO AND S=SAY TO
2060 IF a$(k)="G" OR a$(k)="S" T
HEN GO TO 2100
2070 REMark GO TO 200 IF MAIN CO
MMAND TYPENOT FOUND YET
2080 GO TO 2120
2090 REMark FURTHER CHECK ON INS
TRUCTION TYPE
2100 IF a$(k TO k+1)="GO" THEN G
O TO 2150
2110 IF a$(k TO k+5)="SAY TO" TH
EN GO TO 2180
2120 NEXT k
2130 STOP
2140 REMark MOVEMENT ROUTINE SHO
ULD BE SITUATED HERE.
2150 PRINT "A DIRECTION"
2160 REMark GO BACK FOR MORE INP
UT
2170 GO TO 2020
2180 PRINT a$
2190 REMark CHECK TO SEE IF PLAY
ER CALLED CORRECT CHARACTER IE.
AN ALIEN.
2200 IF a$(8 TO 11)="ALIE" THEN
GO TO 2240
2210 REMark NOT ASKED FOR CORREC
T CHARACTER
2220 PRINT"NO CHARACTER OF THAT
NAME HERE":PAUSE 0: GO TO 2000
2230 REMark START OF SCAN TO FIN
D APOSTROPHE WHICH REPRESENTS QU
OTE MARK.
2240 LET M=1
2250 IF a$(M)="" THEN GO TO 231
0
2260 REMark IF NOT FOUND ERROR I
N INSTRUCTION.
2270 IF M=LEN (a$) THEN PRINT"I
DON'T UNDERSTAND": GO TO 2000
2280 REMark CONTINUE SCAN
2290 LET M=M+1: GO TO 2250
2300 REMark TAKE EVERYTHING BETW
EEN QUOTE MARKS AND PUT IN NEW V
ARIABLE TO BE TREATED AS SEPARAT
E INSTRUCTION STRING.
2310 LET B$=a$(M+1 TO LEN (a$)-1
)
2320 REMark MONSTER REPLIES BUT
YOU CAN INSERT MORE IFS FOR REPL
IES OR USE THE STRING SEARCH TEC
HNIQUE AGAIN.
2330 IF B$="WHERE IS THE CLOCK"
THEN PRINT "THE ALIEN SAYS: 'IT
IS BEHIND MY THRONE, BUT THAT IS
OF LITTLE MATTER TO YOU.'"

```



[illegible]

But wait. There's more to this Club than just the £'s you'll save on software. As a Member you will receive a bi-monthly magazine, packed with in-depth reviews (including lots of screen photos), competitions to enter, game playing tips and lots, lots more. Hurry now. If you apply for membership within four weeks\* we will give you a £1 voucher towards your first purchase. So send off the coupon now and we'll send you our most recent Club Magazine by return. If you are not absolutely delighted we will give you your money back!

(\*£5 applies to UK & BFPO only. Other rates are £7 Europe, £9 USA & Middle East, £12 Australia, Far East & S. Africa.)

KELVIN HOUSE  
TOTTERIDGE AVENUE  
HIGH WYCOMBE  
HP13 6XG  
(0494) 450586



# 

- \* **OVER 500** different titles available for hire including **ARCADE, ADVENTURE, BUSINESS, EDUCATIONAL**, etc.
- \* **OVER 10,000** tapes in stock. All publisher's originals.
- \* **LOWEST HIRE CHARGES**—hire up to 3 tapes at a time, from only 63p (plus P&P and VAT) for 2 weeks hire.
- \* **FREE** printed **CATALOGUE**.
- \* **FREE** newsletter with hints, tips, reviews, etc.
- \* **TAPES** for sale at **DISCOUNT** prices, (eg **MANIC MINER £2.00**).
- \* **FAST, FAST SERVICE**. All tapes sent by 1st class postage.
- \* **HALF-PRICE OFFER**—**LIFE** membership **ONLY £3.00** (normally £6.00).
- \* **FREE** first hire tape. (For limited period).
- \* **EUROPEAN MEMBERS WELCOME**. (Payment in Sterling).

Have you ever been disappointed with software you've purchased? Now you can hire it first. If you like it, buy it at £1.00 off our already discounted prices. If you don't, send it back and it will only cost you the hire fee.

**NSL** is the best **SPECTRUM** library, with over 8,000 delighted members, the largest range of tapes and controlled by our computer with 22 mb hard disc. **JOIN TODAY**, or, if you don't believe our claims write or 'phone 01-661 9240 for a catalogue, and check our competitors. We're confident you'll join **NSL**.

## 

42 Harefield Avenue, Cheam, Surrey SM2 7NE.

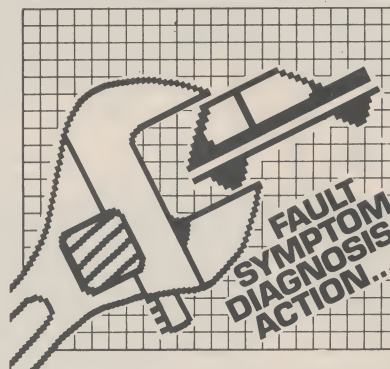
I enclose £3.00 for **LIFE MEMBERSHIP**. Please rush my membership kit to me. If, within 28 days, I'm not delighted with your service you'll refund my membership fee.

Name \_\_\_\_\_

Address \_\_\_\_\_

SU7

## 



**CAR CURE** will transform your micro into an expert mechanic to help you find faults on your car and determine the cure.

The program will equally well help you learn about the faults cars can suffer, their symptoms and cures.

At the heart of **CAR CURE** is an advanced database that squeezes a vast amount of information into restricted memory and processes it at lightning speed.

**CAR CURE** comes complete with a comprehensive 5000 word User Guide and is packaged in a long-life plastic wallet. Order direct from us for only £9.95, or send for further information. Delivery by return. Available on cassette for 48K Spectrum & Spectrum +.

DEPT SU  
4 CLARENCE DRIVE  
EAST GRINSTEAD  
WEST SUSSEX  
RH19 4RZ  
Tel. 0342 28188



**SIMTRON**  
PROGRAMS TO HELP YOU

- ★ **COMPREHENSIVE**
  - + 900 faults
  - + 300 symptoms
  - + 90 parts
  - + 1000's of screens of information

### 

- ★ **POWERFUL FEATURES**
  - + List faulty parts for every symptom
  - + Display faults for each part
  - + Find how to cure the fault
  - + Trace symptoms of any fault
  - + Identify faults causing 2 symptoms
  - + Mark items for easy reference
  - + Eliminate faults checked OK
  - + Review progress on summary screen
  - + Call help if in difficulty
  - + Save diagnosis on tape

### 

- ★ **EASY TO USE**
  - + Colour coded menus to guide you
  - + Available commands always displayed
  - + Single key commands
  - + Special beginners mode

## 

Why buy programmes for your Spectrum when a world of free 'telesoftware' is open to you. Discover Prestel, Micronet 800, Viewfax, bulletin boards and open a whole new world. Even user to user.

Everybody's doing it — linking their home computers to giant mainframes and networking to thousands of other micro users via the phone and a modem.

A whole new world of mainframe games, electronic mail, free 'telesoftware', electronic notice boards, real time conversation, armchair shopping and home-banking will be at your fingertips! And at local and cheap rate, phone charges are only around 40p for a whole hour's entertainment.

Spectrum 16k, 48k, Spectrum + The **VTX 5000 Modem** comes complete with all the software (in ROM) required to access the world of electronic communications, networks, telesoftware and databases (both public and private.)

(User to user software on cassette £3.95 extra)

Terminal Emulation Software Package to link to commercial databases and bulletin boards which use ASCII format on cassette £6.95.

The **VTX 5000** requires no external power and fits under your Spectrum to become part of the machine. Only one lead links your computer to the outside world.

FOR THE SPECTRUM 16K, 48K AND SPECTRUM + THE VTX 5000 IS AVAILABLE AT A VERY SPECIAL PRICE

**£49.95** inclusive of VAT and P&P for a limited period only.

### 

Order your **VTX 5000 NOW** and get a **FREE** quarter's subscription to **Micronet 800** and **Viewfax**.

All modems provide 1200/75 baud, enabling access to Prestel, Micronet 800, BT Gold, Farmlink, Citiservices, Homelink, and some free bulletin boards (some databases and networks require a small subscription). Fully BT Approved.

Simply clip the coupon and send it with a cheque (payable to Modem House) to:

**MODEM HOUSE**  
Iolanthe Drive  
Exeter,  
Devon EX4 9EA  
Tel: (0392) 69295

Please send to me:

- ☐ Spectrum Modem(s) £49.95
- ☐ User to user software £3.95
- ☐ Terminal £6.95

I enclose £ \_\_\_\_\_

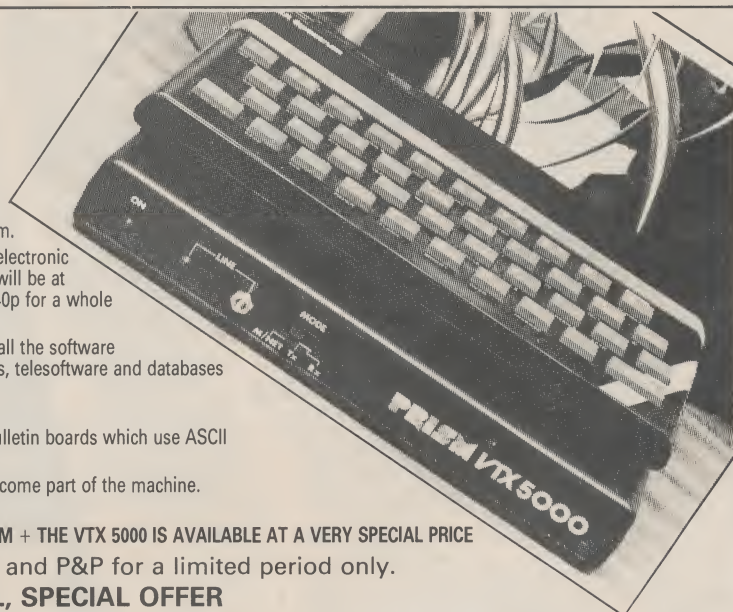
Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Please allow 28 day delivery

This offer applies only while stocks last.







**G**reetings one and all from balmy Samarrak, whose market is renowned for its magical wares and weaponry. The woes I recounted to you in my last missive have been soothed by a letter from the Lady Marion.

"Be ye not desolate," says she. "Know that scrolls sent to be known as the Grand Elf were scribed in the distant past, long ere you were my favour." My old heart quickens at this news. Mayhap you will encounter the lady within the webs of Micronet, as she dispenses Scrolls of Wisdom.

This market then — as Zul, Zel and I strolled through the booths we met many travelling merchants who had passed by the Ogre over the years.

From Zignash, a reformed orc and member of the Guild of Ectoplasmists, I purchased the bottled spirit of Firedemon. I am confident the imp will prove useful. From Majari, a shifty southern crook with an eyepatch, I acquired two ounces of Black Lotus — enough he said to render an entire army amnesiac and unconscious.

Besides these I bought loaded dice — a man must make a living — salves and balms, a new ring mail hauberk, a bronze cap topped with a silver boar and a spiked mace. This has the power to return to the bearer when thrown or dropped. A few tests proved the efficacy of this wondrous club, though I was forced to recompense a group of eastern nomads for the loss of two camels.

Many bemused adventurers thronged the wine stalls. Sir Lee the Knightley, Pip of Hipwell and the Lady Carol de Whitham have long tried to prove the innocence of the drugged Major, one of Sherlock's suspects.

Once you have revealed yourselves to this old soldier in his opium den, there are but two short minutes in which to save him from Lestrade's bullets. Be swift — tell the Inspector simply that the Major has visited the den. The key is 'Visit'. Opium he may eat, lead he need not.

Another task for the detective is to

solve certain codes found on sundry scraps of paper. Hardiman Harding of Brighton and Jugman Johnson of Sunderland pressed me for the answer. This is not so simple — the torn note and the ripped note are both parts of the same message and have the same code.

Consult your great tome — such as the venerable Britannica — for articles on cryptology. In them you may find frequency tables which show the letters used most often in the English tongue. Count the letters in the message to find the most frequent — this should be 'E'. One of the three-letter words is 'THE'. From here you can begin to build up the message, by guesses and sheer hard work.

Lastly the singed note; care is needed as it is the reply to the others and, curses, is writ backwards! Reverse it and begin your decoding in the same way.

Master Hipwell claims full success in **Mountains of Ket, Temple of Vran, Urban Upstart and Snowball**. Write to him — courier prepaid — at 3 Spring Lane, Wyomondham, Melton Mowbray, Leicestershire LE14 2AY.

Clive the Parson of St. Columb seeks the **Eye of Bain** but cannot pass the dreadful creature in the well. Once he

## Gordo purchases some magical wares and drops clues in the wine stalls

has his ruby he should read the inscription thereon. This will tell him what can harm the beast — one of the elements.

This element is contained within the gem itself and he must descend into the depths and simply SAY the name of the element. In the same quest Mantle of Sheffield cannot get rid of the chain: find a rock and strike it off. Thus 'tis done.

Huntsman Hunt of Barrow and the fair Alison of Wirral sat in argument over the shapechanging at **The Witches Cauldron**. One wished to become an ape. Take the eyes of a sheep, a diamond which makes music, a snail which lives with mice, and Moonshine — the liquid kind and not Our Lady's beams.

Climb a bench, crush the snail-shell in a pestle and then stir this horrid brew in the cauldron. Drink and ye shall become an ape.

Fair Alison could not change at all. For your first turn, turn about three times and say pussycat backwards — then you may begin the quest. Those who become apes may climb a cupboard and find a

key. Southerly doors will open then.

Toiler Thompson of 57 Derwent Drive, Milton Manor, Tewkesbury, Gloucestershire knows many secrets of **Tir Na Nog** but cannot reach Dhub Sgorr or Snathad. Share help with him if you will as he knows Middle Earth well.

Sharing a cup with the Lady Sheila of Cambridge she confided to me a number of troubles. First the ogre beyond the pool in the **Mountain of Ket**. Try as she might she could not get him to dice with her. I suggested that she might need to read the **Goblin Gazette** before so doing as this ogre is publicity conscious.

To hell had she been too, even to the **Inferno**. She could not get round three-headed Cerberus. If she digs close to him she may find something to throw.

Master Adventurer Walters of Knotty Green came by with hints in the quest of **Dragon Torc**. On the first level search for a bow and trade this for a sickle with an elf. Cutting herbs with this will gain an **ENERGISE** spell.

Also, under a slab there lies a jewel. Trade it likewise for a message which, taken to yet another slab, will reveal the second level: the **Lost Vaults** — do you not shudder? Those who wish to escape this level must find the letters **EXIT** — subtly here! — and arrange them on top of the E to reveal yet another layer.

Dolsig of I know not where and Stanley of Bromsgrove wandered by. I heard them groaning over **Valkyrie 17** and leapt to their aid. Having killed the evil Reichsmuller, Dolsig had no clue about his next steps. A taxi he must find. To take him where? Ah, he should have looked through a seafront telescope — forward and back. A destination should become visible once that is done.

Stanley could find no cash to pay his hotel bill — I know the type. Pawn some valuables in the town but remember you cannot go by cablecar. Skis are the thing. See amid the winter's snow . . .

So farewell again my friends. To Urtuun I must now go, ever southward and ever onward. There I hope to hear of the Ogre's fate and my hope for comfort in my age. 'Til next moon. Ride and prosper.

*Greatbelly*

Gordo Greatbelly, Landlord

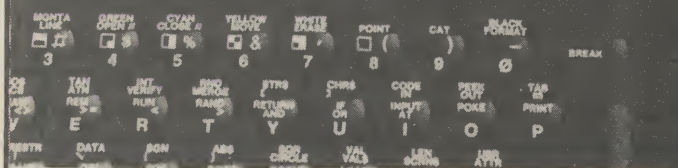
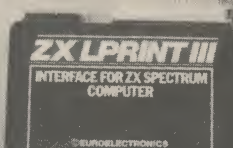
If you have a tale to tell, or are in need of a helping hand, write to the Landlord of the Dancing Ogre c/o Sinclair User, Priory Court, 30-32 Farringdon Lane, London EC1R 5BH.



# ZX SPECTRUM PRINTER INTERFACE

"One of the most comprehensive printer interfaces available for the Spectrum. With a choice of both Centronics and RS232 in the one interface it will satisfy most." (SINCLAIR USER MAGAZINE).  
"A remarkable device which packs considerable ingenuity into a small box. Should be almost irresistible." (COMPUTING TODAY)  
"I will keep looking for the perfect interface but in the meantime I'll use the next best thing - ZXlprint III." (ZX COMPUTING)

£34.95  
cable £9.95  
inc. VAT



ZXlprint III interface enables your Spectrum computer (16 or 48K) to print on almost any dot matrix or daisy wheel printer with RS232 or Centronics input. Just plug in ZXlprint III and LPRINT and LLIST commands will work. COPY works without any software on Epson, Star Delta, Brother HR5 & 1009, Gemini, Walters WM80, Mannesman MT80, Kaga Taxan, Cannon, Shinwa, Seikosha 100, 250 & 500. Plus Seikosha GP700 in FULL COLOUR. Also available is optional COPY in 4 colours on CGP115, MCP40 & 80 and SCP80.

No additional software needed - RAM is free to take Tasword 2, Masterfile, OCP +80 software, Kemp Business Accounts etc.

- WORD PROCESSING ● PLUG IN FOR LLIST, LPRINT & COPY
- PRINTS SPECTRUM GRAPHICS & UDG's ● HIGH RESOLUTION SCREEN DUMPS ● TWO COPY SIZES ON EPSON & COMPATIBLES
- PRINTS PRESTEL FRAMES WITH SUITABLE MODEM
- COMPATIBLE WITH MICRODRIVES & INTERFACE 1

## EUROELECTRONICS

TRADE SALES: (0684) 292448

AVAILABLE FROM TRANSFORM LTD,

24 WEST OAK, BECKENHAM, KENT, BR3 2EZ TEL: 01-658 6350

From: Name \_\_\_\_\_

Address \_\_\_\_\_

This order is for: (Qty) \_\_\_\_\_ (Qty) \_\_\_\_\_  
 ZXlprint III at £34.95 \_\_\_\_\_ Centronics Cable at £9.95 \_\_\_\_\_  
 RS 232 Cable at £9.95 \_\_\_\_\_ 4 Colour Option at £5.00 \_\_\_\_\_  
 Tasword 2 at £13.90 \_\_\_\_\_

Cheques/PO payable to  
TRANSFORM LTD

Please specify make of your printer \_\_\_\_\_

ZX Spectrum is a registered trade mark of Sinclair Research Ltd.



# 01-658 6350



NEW

## MD1b/WD1b for TAPE TO DRIVE TRANSFER

You now have a **CHEAP** but **FLEXIBLE** means of transferring your programs with our information sheets and software (not limited to a small list). Get much satisfaction and learn at the same time.

To transfer most programs to **MICRO/WAFADISC** drive you **MUST** have this program. It gives you the tools to convert programs to that they will run on your drive. Includes ability to cope with v.long programs, can split/chop bytes in one go, "VAL" creator, REMkill, make Visible, etc, etc. **FULL** manual with example transfers. (also need TC7 for latest programs). MD1b (WD1b for disco or Wafadrive owners) costs a mere **£6.99**.

**EXTRA** program to **CONVENIENTLY** transfer converted bytes directly to m/drive with many other features (e.g. after program names, stop programs, etc) buy MT6 at **£3**. (Wafadrive version is called **WAFATAPE** at **£4**).

NEW

## LERM INFORMATION SHEETS

Each sheet gives you the **DETAILS** required to transfer a selected no. of the more difficult **POPULAR** programs. £2 each plus SAE. Up to 2 available.

**UPDATE SERVICE** for latest version on your LERM product send old tape + large SAE to get a **£2 REDUCTION**. **OVERSEAS:** add \$1 Europe, \$2 others for each product. **SAE for enquiries**.

**ALL PROGRAMS CARRY OUR MONEY BACK GUARANTEE** (not updates).

LERM, DEPT SU, 10 BRUNSWICK GDNS,  
COREY, NORTHANTS.

## BETA BASIC 3.0

SINCLAIR USER, JAN. 85 (ABOUT RELEASE 1.8): "HAS ESTABLISHED ITSELF AS THE STANDARD EXTENDED BASIC FOR THE SPECTRUM.....TURNS SINCLAIR BASIC FROM A GOOD VERSION OF THE LANGUAGE TO A FANTASTIC ONE..." NOW, WITH RELEASE 3.0, BETA BASIC BECOMES PROBABLY THE MOST POWERFUL BASIC AVAILABLE ON ANY 8-BIT MICRO!

- \* **PROCEDURES** - a very full implementation that lets you extend Basic easily. With parameter passing by value or by reference (including arrays), LOCAL variables, recursion, DEFAULT parameter values, and the ability to handle parameter LISTS of any length. No PROC keyword is needed; e.g. you can use things like: swap a,b or draw\_box 10,20,5 or addup b(),sum.
- \* **GRAPHICS** - up to 128 WINDOWS, each with its own character size (giving 1-64 chars/line!) and attributes. ROLL and SCROLL any part of the screen by any number of pixels in any direction! Use GET to store parts of the screen, then put them back anywhere at different magnifications. Fast FILL, ALTER attributes, PLOT strings, DRAW TO a point, change scale and origin.
- \* **TOOLKIT** features: Renumber with block move or copy; block DELETE, search and/or change (e.g. ALTER applies TO all 36 User-defined keys. List the variables, list DEF KEYS.
- \* **EDITOR** - lets you move the cursor around the screen 10 times faster! And you can move the cursor up and down within edited lines. AUTO, EDIT, JOIN and SPLIT commands.
- \* **LISTINGS** with optional automatic indentation of loops, IF, procedures etc. Works on existing programs e.g. you can choose to list:  
10 FOR n=1 TO 10: PRINT n: NEXT n  
as: 10 FOR n=1 TO 10  
PRINT n  
NEXT n
- \* **KEYWORDS** can all be entered by typing them in full, or by the "single entry" method, or both in the same line; e.g. the line:  
10Print"hello";if x=1 THEN goto 100 will be recognised and listed normally.
- \* **Upgrades** to Release 1.8 customers: If you bought direct from us, there is no need to return your cassette - just quote the (approximate) original purchase date with your order; otherwise return your cassette and name your supplier. The upgrade price of £6.95 (£7.50 overseas) includes a new manual.
- \* **ARRAY** and string handling features include fast INSTRING (100,000 chars/sec) and INARRAY search functions. You can JOIN arrays together, delete, transfer and insert sections, change dimensions without data loss. LENGTH function gives dimensions. Ultra-fast array SORT - e.g. a\$(500,30) will sort in about 3 seconds!
- \* **MICRODRIVE** commands let you use simple forms, or exactly the same commands you normally use for tape - just enter DEFAULT =m1 or m2. Some possible Microdrive commands: SAVE "name", ERASE "name", LOAD 1, "name", SAVE 10 TO 100; "part prog", SAVE a "slicer" or just the variables. MOVE programs, CODE, arrays. MERGE auto-running programs. End-Of-File function.
- \* **OTHER FEATURES**, new or improved, are too many to describe: DO - LOOP structure with WHILE, UNTIL and EXIT IF; BREAK, CLEAR, CLOCK, CONTROL CODES, EDIT variables, ELSE, GET, KEYIN (programs can write themselves!) multi-LET, (LLIST a "slicer" ON (works with line nos, pros, etc.) ON ERROR, OVER 2, POKE strings, POP, READ LINE, TRACE, USING, DPOKE. Faster GOTOS, GOSUBS and FOR-NEXT loops.
- \* **26 FUNCTIONS:** AND, OR, XOR, DEC, HEX\$, BIN\$, SINE, COS, RNDM, CHAR\$, NUMBER, DPEEK, EOF, FILLED, INARRAY, INSTRING, ITEM LENGTH, MEMORY\$, MEM, MD, SCRN\$, SHIFT\$, STRING\$, TIMES, USING\$.
- \* **Spectrum Basic compatible** - you can run existing programs. Transferable to Microdrive. Syntax check on entry. Extra error messages. Compatible with most printer interfaces (please specify). Wafadrive version available.
- \* **Comprehensive A5-size manual**. More than 80 pages, with many examples.
- \* **To show you the power of Beta Basic's procedures**, we include a **FREE TURTLE GRAPHICS** package!
- \* **Release 1.8** remains available, at a lower price of £8.95 (£9.50 overseas). You can upgrade later to Release 3.0 for £6.95 (£7.50 overseas).
- \* **TRANSFORM** your Spectrum with BETA BASIC 3.0 for just £14.95 inclusive! (£15.50 overseas).

(TICK AS APPROPRIATE.) PLEASE SEND ME:

- [ ] BETA BASIC 3.0. PAYMENT OF £14.95 (OR £15.50 OVERSEAS) IS ENCLOSED.
- [ ] BETA BASIC 3.0 UPGRADE. PAYMENT OF £6.95 (£7.50) IS ENCLOSED.
- [ ] BETA BASIC 1.8. PAYMENT OF £8.95 (£9.50) IS ENCLOSED.
- [ ] MORE INFORMATION ON \_\_\_\_\_ I HAVE/DO NOT HAVE RELEASE 1.8 ALREADY.

A STAMPED ADDRESSED ENVELOPE IS ENCLOSED.

## BETA SOFT

92 OXFORD RD.  
MOSELEY  
BIRMINGHAM  
B13 9SQ



# Computer and Video Games is back . . . with a Licence to **Thrill!**



Don't miss our **FREE James Bond poster** and  
**exclusive View to a Kill competition** and a  
**FREE 32 page Book of Games.**

**PLUS** a **FREE Shadowfire  
E-Team poster** and  
**competition. Win an  
Omnibot and a trip  
to the London  
Planetarium.**

**PLUS Supergran, Airwolf,  
Elidon and Rocky Horror  
Show prizes to be won.  
PLUS news, views, reviews,  
software chart, Arcade  
Action and lots more.**

**COMPUTER AND VIDEO GAMES**  
is on sale at your newsagent on the  
**16th of every month.**

GENERAL ENQUIRIES  
TELEPHONE  
**0924-402337**

**HARDWARE**  
SPECTRUM PLUS (ESD free Software) £129.00  
SINCLAIR QL £359.00  
CANON PW7080A PRINTER (inc Interface) £315.00  
MANNESSMAN TALLY M780 PLUS PRINTER (Centronics) £199.00  
SHINWA CP80 PRINTER (Centronics) £199.00  
SHINWA CP80 PRINTER (Centronics) £215.00  
MICROVITEC M4131 (SPECTRUM) MONITOR £245.00  
MICROVITEC M01451 (QL) MONITOR £250.00  
PHILIPS GREENSCREEN MONITOR £78.00  
3 CHANNEL SOUND £28.00  
CURRAH MICROSPEECH £20.00  
VOX BOY £33.00  
VTX 5000 MODEM £65.00  
KEMPSTON INTERFACE £11.00  
DK TRONICS DUAL PORT INTERFACE £12.00  
BUDD INTERFACE (+ reset switch) £12.95  
DATA ELECTRONICS INTERFACE £19.95  
CAMBRIDGE PROGRAMMABLE JOYSTICK + INTERFACE + PROGRAM £29.00  
DK TRONICS PROGRAMMABLE INTERFACE £20.00  
QUICKSHOT II JOYSTICK £11.00  
FORMULA I JOYSTICK £16.95  
SURE SHOT JOYSTICK £15.00  
ZIP STICK JOYSTICK £11.95  
SPECTRUM PLUS PVC COVER £2.99  
SAGA EMPEROR PVC COVER £3.99  
SPECTRUM HARD COVER £4.99  
CURRAH MICROSOFT £36.95  
EXTENSION TO KEYWAY (Ribbon) £11.00  
MICRODRIVE EXTENSION LEAD £5.00  
ON/OFF SWITCH £3.95  
SPECTRADOS TO CENTRONICS PRINTER LEAD £10.00  
WAFADRIVE TO CENTRONICS PRINTER LEAD £10.00  
ZX EXPANSION SYSTEM (Includes Microdrive/Interface 1/Tasword Two/Masterfile/Ant Attack/Games Designer) £95.00  
ZX INTERFACE 1 £45.00  
ZX MICRODRIVE £45.00  
SPECTRADOS DDOS £39.95  
WAFADRIVE £39.95  
PARROT, WABASH & 3M DISKETTES  
S.D. 401 10 for £16.00  
D.S. 401 10 for £20.00  
D.S. 401 10 for £26.00  
\*Ant attack disks include free plastic case.  
**CENTRONICS PRINTER INTERFACES**  
KEMPSTON INTERFACE-S (Rom for Spectrum-Centronics Printer) £40.00  
KEMPSTON INTERFACE-S (Cassette Based Interface as above) £37.00  
TASMAN INTERFACE (Cassette Based Interface as above) £35.00  
DK KEYBOARD £37.00  
SAGA EMPEROR KEYBOARD £48.00  
DK LIGHT PEN £18.00  
LIGHT WRITER £11.99  
MICRODRIVE CARTRIDGE PACK OF 4 CARTRIDGES £7.50

## THOUGHTS & CROSSES

37 MARKET STREET, HECKMONDWIKE, WEST YORKS.

Shop Hours 9 am — 5 pm Mon — Sat

24hr CREDIT CARD  
ORDERS TEL:  
**(0924) 409753**

Title	R.R.P.	Ours	Title	R.R.P.	Ours	Title	R.R.P.	Ours	Title	R.R.P.	Ours
Designers Pencil	14.95	13.50	Invaders	4.95	*	The Great Space Race	14.95	*	Gift from the Gods	8.95	8.95
Ghost Busters	9.95	8.95	Maziacs	6.95	6.25	Hunchback	6.95	6.95	Hunchback	6.95	6.95
Pittfall	8.95	7.10	Metroids	4.95	*	Kong Strikes Back	6.95	6.20	Musimaster	9.95	9.95
Spaceshuttle	9.95	8.95	Personal Finance	6.95	6.25	Mr Wimpy	3.90	3.90	Scrabble	15.95	*
River Raid	9.95	8.95	Eureka!	14.95	13.50	Pogo	5.90	5.30	Small Business	12.95	*
Football Manager	8.95	8.25	Scuba Dive	7.95	7.15	Royal Birkdale	5.90	5.30	Speech Marks	7.95	7.15
Combustion	8.95	8.95	Kokotonia Wilt	5.95	5.35	Stop the Express	7.95	6.25	Stop the Express	7.95	6.25
Incredible Hulk	9.95	8.95	Airwolf	6.95	6.25	Match Day	7.95	7.50	The Apostrophe	7.95	7.15
Sorcerer of Claymore Castle	9.95	8.95	Countdown	6.95	6.25	Vu Calc	8.95	8.95	Vu Calc	8.95	8.95
Spider Man	8.95	8.95	ABC Liffort	7.95	7.90	Vu 3D	9.95	9.95	Planet of Death	6.95	*
Son of Blagger	8.95	5.35	Snafu	9.95	8.95	VAT Manager	8.95	8.05	Inca Curse	6.95	*
Chess	8.95	8.95	Word Wizard	7.95	7.15	Standard	8.95	8.05	Learn to Read 1	9.95	*
Mr Wongs	6.95	6.25	Grand National	7.95	7.15	Address Manager	19.95	17.95	Learn to Read 2	9.95	*
Loopy Laundry	6.95	6.25	The Pyramid	2.50	4.95	Plus 80	19.95	17.95	Learn to Read 3	9.95	*
World Cup Soccer	6.95	6.25	Back Packers Guide	7.50	6.75	VAT Manager	19.95	17.95	Learn to Read 4	9.95	*
Chuckie Egg II	6.90	6.20	The Drive In	7.50	6.75	Plus 80	19.95	17.95	Learn to Read 5	9.95	*
New Cylon Attack	6.90	6.20	Booby	2.50	2.50	Stock Manager	19.95	17.95	Survival	9.95	*
Beta Basic	11.00	9.90	Viking Raiders	2.50	2.50	The Forest	19.95	17.95	Astro Nut	5.95	5.35
Lords of Midnight	9.95	8.95	Boulder Dash	7.95	7.15	Editor & Assembler	8.95	8.95	Manic Miner	5.95	5.35
Doomdarks Revenge	9.95	8.95	Boiler House	7.95	7.15	Spectrum Monitor	8.95	8.95	Load Runner	5.95	5.35
Tsyron	7.95	7.15	Ad Astra	5.95	5.35	Factory Breakout	5.50	4.95	Tasprint	9.90	8.90
Manic Miner	5.95	5.35	Tir Na Nog	9.95	8.95	Paint Plus	5.95	5.95	Tasword Two	13.90	12.50
Twin Kingdom Valley	15.00	13.50	The Quill	14.95	13.00	Screen Machine	7.95	7.15	Brain Boggler	7.95	7.15
Masterfile	19.95	18.00	The Illustrator	14.95	13.50	Mission 1	9.95	8.95	Starbike	7.95	7.15
Masterfile & MF Print	19.95	18.00	Monty is Innocent	5.95	5.35	Airfitter	7.95	7.15	Alien 8	7.95	7.15
Sieve Davis Snooker	6.95	6.25	Sam Stob	6.95	6.25	Hunter Killer	7.95	7.15	Conquer	5.95	5.35
Fear George	6.95	6.25	Word Spell	6.95	6.25	Hopper	5.95	5.35	Jelpac	5.50	4.95
Paddington	7.95	*	Ballooning	6.95	6.25	Les Fics	6.95	6.25	Knight Lore	5.95	5.35
Disappearing Ink	7.95	*	Purification Pete	9.95	8.95	Acquaplane	6.95	6.25	Luna Jetman	7.50	4.95
Paddington Early	7.95	*	Rally Driver	7.95	7.15	Dragonbane	6.95	6.25	Sabre Wolf	5.95	5.35
Visit	7.95	*	Run for Gold	9.95	8.95	Erk Brewstov's	6.95	6.25	Tranz Am	5.95	5.35
Paddington Problem	7.95	*	Yacht Race	9.95	8.95	Pro Darts	6.95	6.25	Underworld	5.95	5.35
Picture	7.95	*	Battlecars	7.95	7.15	Meteor Storm	6.95	6.25	Beach Head	5.95	5.35
Paddington Shopping	7.95	*	Talisman	7.95	7.15	Word Processor	6.95	6.25	Blue Max	7.95	7.15
Mix Up	7.95	7.15	Avolon	7.95	7.15	Fred	6.95	6.25	Bruce Lee	7.95	7.15
Volcano	7.95	7.15	Dragonator	7.95	7.15	Games Designer	14.95	13.00	Spy Hunter	7.95	7.15
Astronomer	9.95	8.95	Maze Craze	7.95	7.15	The Snowman	6.95	6.25	Read over Moscow	7.95	7.15
Backgammon	9.95	8.95	Technician Ted	7.95	7.15	Zombie Zombie	6.95	6.25	Zaxxon	7.95	7.15
Bridge Tutor	5.95	5.35	Heathrow	7.95	7.15	3D Anti Attack	6.95	6.25	Stranglopop	5.95	5.35
Advanced	5.95	5.35	Night Driver	5.95	5.35	3D Star Strike	5.95	5.35	Racing Manager	5.95	5.35
Beginner	9.95	8.95	Nightlife	5.95	5.35	Apocalypse	5.95	5.35	The Island	5.95	5.35
Extended Basic	9.95	8.95	3D Lunar Attack	14.00	12.50	Inferno	5.95	5.35	Moon Buggy	5.95	5.35
Floating Point Forth	14.95	13.50	Dev Pac 3	14.00	12.50	1994	5.95	5.35	Snooker	8.95	8.95
Pinball Wizard	9.95	8.95	Pascal	9.45	8.50	Unsub Upstart	6.95	6.25	Android Two	8.95	8.95
Superchess 3.5	8.95	8.05	C. Compiler	24.99	22.50	Trans Express	6.95	6.25	Cyberone	7.95	7.15
Formula One	8.95	8.05	Alchemist	3.50	*	Titanic	7.95	7.15	Castle Speller	7.95	7.15
Supercode II	8.95	8.05	Armadillo	3.50	*	Biorthymis	7.95	7.15	On the Edge	8.95	8.95
Supercode III	12.95	11.65	Jumping Jack	5.50	*	Chess	7.95	7.15	Shadow Fire	8.95	8.95
Two Masterfile/Ant Attack/Games Designer	6.95	6.25	Fifth	5.95	5.35	Capital Letters	7.95	7.15	Wizard's Layer	6.95	6.25
Danger Mouse	6.95	6.25	Great Detective	5.95	5.35	Quickered Flag	7.95	7.15	Minder	9.95	8.95
Black Forest	6.95	6.25	Handicap Golf	5.95	5.35	Club Record Control	6.95	6.25	911 TS	6.95	6.25
Danger Mouse	6.95	6.25	Highway Code	5.95	5.35	Collectors Pack	6.95	6.25	World Series Baseball	6.95	6.25
Double Trouble	6.95	6.25	Magic Roundabout	5.95	5.35	Driller Tanks	5.95	5.35	Emerald Isle Level 9	8.95	8.95
Delta Wing	6.95	6.25	Starzaker Secrets	5.95	5.35	Lightmagic	5.95	5.35	The Bulge	6.95	6.25
Derby Day	5.95	5.35	Formula One	5.95	5.35	English Literature	6.95	6.25	Shannon	7.95	7.15
Fifth	5.95	5.35	War of the Worlds	7.95	7.15	History	6.95	6.25	Evil's a Wally	7.95	7.15
Great Detective	5.95	5.35	Dungeon Master	7.95	7.15	Inventions	6.95	6.25	Battle for Midway	9.95	8.95
Handicap Golf	5.95	5.35	Romance Revenge	7.95	7.15	Make a Game	6.95	6.25	Death Star Interceptor	7.95	7.15
Highway Code	5.95	5.35	Micro Olympics	5.95	5.35	Print Utilities	6.95	6.25	The Big	7.95	7.15
Magic Roundabout	5.95	5.35	The Magic Sword	7.95	7.15	Ship of Doom	14.95	13.00			
Starzaker Secrets	5.95	5.35	Dark Star	7.95	7.15	Horace Goes Skiing	5.95	5.35			
Formula One	5.95	5.35	Dictator	4.95	4.50						
War of the Worlds	7.95	7.15	Fruit Machine	4.95	*						
Dungeon Master	7.95	7.15	Galacticans	4.95	*						
Romance Revenge	7.95	7.15	Golf	4.95	*						
Micro Olympics	5.95	5.35									
The Magic Sword	7.95	7.15									
Dark Star	7.95	7.15									
Dictator	4.95	4.50									
Fruit Machine	4.95	*									
Galacticans	4.95	*									
Golf	4.95	*									

All prices include postage, packing and VAT. Overseas orders welcome. Please order stating, 1) Program Required, 2) Amount Enclosed, 3) Name and Address. 4) Type of computer.

\*Indicates Half Price



## Richard Price sets out on the road to Rivendull while Tolkien turns in his grave

**N**OT LONG AGO, after a long day at the keyboard, I settled down in front of the TV for a few hours of mindstretching intellectual activity – namely *Hawk the Slayer*, a film which would make *Mary Poppins* seem like high art.

At the beginning was a short voiceover which summed up the plots of about 75 percent of all adventure programs: "This is a story of heroic deeds and the bitter struggle for the triumph of good over evil and of a wonderous sword wielded by a mighty hero when the legions of darkness stalked the land."

All but one of this month's software fall into this category. Games designers seem to think that this sort of plot is all that most players need. I doubt it and once again make a plea for real storylines and humour. Grumble, grumble...

Never mind though, Delta 4 Software has taken the archetype of all those solemn hero tales and turned out a classic parody.

### Bored of the Rings

**Bored of the Rings** is a direct and cheerful spoof of Tolkien's trilogy, only the names and aims have been changed to protect the innocent – and to avoid hassles with the copyright.

The game is in three parts and has been written with the **Quill**. There are also graphic scenes produced by Gilsoft's new **Illustrator** package. Delta 4 has plumbed in a fairly pleasing medieval-style typeface and the general presentation is clear and easy on the eye. You get from one part to the next by way of a password given at the end of each section.



First, the plot. Naturally it is very similar to the original but the characters and detail are, ahem, somewhat different. Fordo the Boggit lives in the Shire with his uncle Bimbo. On the principle of W C Fields' dictum 'never give a sucker an even break' he gets landed with the job of returning the Great Ring to Mount Gloom in the Land of Dormor.

So begins the great quest. Fordo and his cowardly chums, Spam, Pimpily and Murky set off for Whee through the forest. On their way they encounter Tim Bumbadil, the ageing acid-crazed hippy and his flower-child girlfriend Hashberry.

From Whee they head towards Rivendull where the full company teams up. There's Legoland the Elf,



Giblet the Dwarf and Aragont, who continually recites his ancestors' names at any conceivable opportunity.

Part one ends at the gates of the Morona Cave Tourist Complex and is fairly simple to solve, acting as more of a scene setter than anything. The second and third sections are tougher but retain the same irreverence towards the great epic.

The humour can be fairly school-boyish at times and there are a couple of occasions when it is both distasteful and unnecessarily unpleasant. On the whole though the game is great fun and well-produced too.

For your £5.95 you will get two cassettes and a daft little booklet with a map of the trek. There's also a microdrive version at £8.95. Fergus McNeill, the author, has told me that the game has been accepted for distribution so you should have little trouble getting it. If not, write to Delta 4, The Shielding, New Road, Swanmore, Hampshire SO3 9PE.

by Spam the "gardener",  
as this point, Fordo noticed  
his uncle Bimbo  
Grandalf  
As he entered, Fordo heard the  
end of a conversation between  
the old wizard and his uncle,  
... and so we'll need to get  
some dense lemmings to take it  
and dump it where old slobball  
can't get it," said Grandalf.  
"But what stupid individual can  
we get for a suicidal folly  
such as this?"  
Bimbo stopped.  
They both looked at Fordo.

### Return of the Joystick

This month is not the Delta 4 Benefit Month and it is pure coincidence that another of its games has turned up in my in-tray.

**Return of the Joystick** is the sequel to **The Quest for the Holy Joystick**. I have never seen the first game but I presume the aim is the same. Like **Bored** this adventure is written with the **Quill** and **Illustrator** and features the same quirky sense of humour.

The game begins outside Alexandra Palace where one of the many ZX Microfairs is about to open. You are a





typical computer punter on the lookout for cheap games and equipment. Little do you know that your simple needs will lead you into the search for the Holy Joystick which is secreted somewhere within the several reality layers of the game.

From the bus stop at Ally Pally you can wander around London and its suburbs. Various well known computing firms can be visited and, in the offices of a nameless publishing company, you will encounter T\*ny Br\*dge and other agents of darkness.

Large numbers of computer games



can also be found there – such as Chublock and Sabre Wilf – and you can enter those games to find vital objects.

There's an element of satire and large numbers of gratuitous tricks – I stepped off the path at Ally Pally only to be devoured by a Bengal tiger and told: 'Gosh, that was unfair wasn't it? Another feeble attempt?'

Reality shifts between the ordinary world and the strange environments of the games. Occasionally you will step into a new location only to find yourself in the USSR or the mystic territory of Delta Tower.

Every entry counts as a minute in the game world and some things will only happen at particular times – if you're in the wrong place that's tough.

Starting time is 9am and you must finish by 10pm. The game gives very little help and it is easy to waste time.

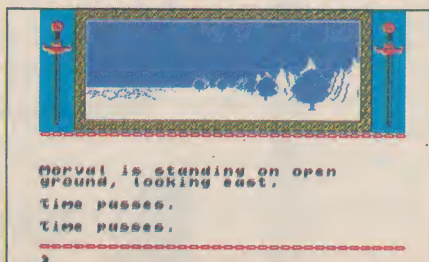
**Return of the Joystick** is not as compulsive as *Bored* but it is equally well put together and does have the virtue of not being an orc-basher game. Some of the humour relies upon in-jokes and you may find that some of the characters are unknown to you – the world of computing companies and magazines may seem big to those in it but to outsiders it may not have the same appeal.

## Runestone

There is another double feature this month – this time from Games Workshop.

**Runestone** is, as far as I know, the only game to date which combines the kind of graphic countryside pioneered in *Lords of Midnight* with a regular text adventure interpreter.

The legions of darkness in this game



are commanded by Kordomir the Dark One. To overcome this evil you must find the Runestone but you will have to search the length and breadth of the Northern Wastes to get help from the Mages of Belorn and the secrets of Saromunder. Orcs are everywhere but there are also allies along the way.

You control three characters in turn, each can be sent on their own journeys among the mountains, lakes and meadowlands of Belorn. There are towers, huts, pavilions and caves which can be entered and dragonships for the lake crossings. Other characters live their own lives while you dither over where to go next.

You needn't go all out to crush the nasty Kordomir if you don't feel like it – there are the treasures of Belorn to be found, the bitter joy of battle against the orcs or else you can simply wander around and take in the sights – my favourite, I have to confess. With about 2000 locations and four views to each that's quite a lot of looking.

The graphics are quite like those in *Midnight* and you move in the direc-

tion which takes your fancy. The features advance and recede as you move. The location picture takes up the top half of the screen and the text buffer scrolls up beneath it.

Commands can be strung together with commas and many can be abbreviated, which means you can move through the country very fast if necessary. Up to 63 characters can be entered at any one time so you can type your instructions in with some fluency. The text interpreter only seems to understand the first three letters of each word – this can result in confusion at times.

The three heroes are Morval the Warrior, Eliador the Elf and Greymarel the Wizard. Other folk are generally individuals and I found no armies in the part of Belnor I explored. The game is more traditional adventure than strategy – no bad thing in my book.

You cannot take control of the subsidiary characters and I found them tough to converse with – that is no criticism as interactive characters are a bonus, even in text-only games.

**Runestone** is an intriguing combination of ideas and formats. The orcs are particularly unpleasant and the combat routines fast and furious. The heroes each have their own cross to bear and their own skills. And watch out for Skrimnal who will rip you off something rotten!

## Key of Hope

The second Games Workshop release is **Key of Hope**, the successor to **Tower of Despair** and a two part adventure with some graphics.

*Tower* featured a cover picture of a strapping weight lifter. **Key of Hope** sports a dramatic, nay pneumatic, warrior-maiden surrounded by fierce beasts and icy pinnacles . . . phew.

This program too is written on the **Quill** and has a difficult gothic typeface. The plot continues the tale of Aelandor in *Tower*.

Castle Argent has been reduced to ruin and the ever-evil Malnor threatens to take over the world. Find the pieces of the key and then destroy Malnor – thus saving the world for the White Goddess of Truth.

All this is better than going to the office though a bit more strenuous. There are 400 locations and an assortment of magical artifacts and horrors.

*continued on page 99*



# CAMEL PRODUCTS

## NIKE POWER BUFFERS

for Spectrum, Atmos, ZX81

£17.35

NEW

## POLYPRINT for Spectrum

... The interface which likes to say ... Ja and Oui and Si & of course YES! A Spectrum Centronics interface unit with up to 8 sets of characters displayed on screen, as per international set in EPSON FX80 printer. Printer driver also in EPROM. POLYPRINT from Silicon City

£44.95

## EPROM PROGRAMMER

BB-PROM for the BBC. With Fast pgm'd, VPP generator, ZIF socket. S/ware in SWR ROM incl. For 2764, 27128 EPROMs

£29.95

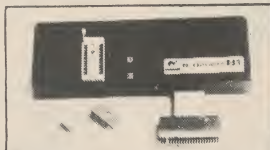
## BLOPROM-SP

A uniquely sophisticated EPROM

## PROGRAMMER

Eprom programmer for the 2516, 2716/32/32A/64/64A/28/128A, yes even the 64A/128A from Intel. Check, Read, Program & Verify all or part of Eprom.

So immensely user friendly you'll hardly need the manual. Designed for the beginner but includes a single key entry route for the professional. Supplied as firmware, the m/c driver routine alone is worth more than the price of BLOPROM-SP. No Personality Cards, or other additions, just a Spectrum. Several inbuilt safety features. On-board Vpp generation. 28pin ZIF socket. Cabled connector and extender plug. ABS case.



STATUS NO. OF SYSTEM —HEX  
EPROM TYPE —27128  
RAM START ADDR —4000  
EPROM ST ADDR —8000  
JOB LENGTH —4000  
TASK —CHECK

WHICH TASK DO YOU WISH TO DO  
W) CHECK THAT EPROM IS CLEAN  
X) READ THE CONTENTS OF EPROM INTO RAM  
Y) BLOW AN EPROM WITH DATA FROM RAM  
Z) VERIFY THAT EPROM DATA IS THE SAME AS IN RAM  
O TO QUIT R TO RESTART

FAST CODES AVAILABLE  
O H PQR WXYZ

EPROMS 2764 £6.00 2712 £8.00

AT LAST! for the Spectrum user. Put your programs, utilities, Assemblers into EPROMS for instant load from the unique ROM-SP



## ROM-SP

Ingenuous unit for Spectrum, with 2x28 pin sockets and a Reset button allows up to 16K of Basic or M/C program to RUN or LOAD instantly from EPROMS. Cabled connector and full extender card. NOTE: Does not disable Sinclair ROM.

£29.95

## PROMER-SP

A brand new Spectrum programmer for 2764/128. Zero insertion force socket & software on tape. Delivery Jan. 84. Order now at

£29.95

## PROMER 81-S

The very popular PROMER-81 for the ZX81 has been adapted to the Spectrum and the price kept low.

£24.95

## ROM-81

Provides two 24 pin sockets for up to 8K of EPROM memory in the 8-16K area. Can use 2516/32 or 2716/32

£14.95

## PROMER-81

A low cost reliable programmer for 2516/32, 2716/32 EPROMS. Requires 4xPP3 batteries

£24.95

## DHOB11

Compact. Mains powered. Safe. Fully cased. Up to 3 EPROMS

£18.95

## DHOB12 With automatic timer

Ingenuous software paged 16K non-volatile CMOS RAM to co-exist in the same area as Spectrum ROM. Easy storage and retrieval of BASIC, M/C or DATA on a 48K Spectrum

£89.95

## PRINT-SP

Centronics Interface with standard Centronics Cable. Software on tape. See also Polyprint.

£31.25

## DREAM-81

64K Rampack with link options to disable 0-8-16K. Plus a 28 pin EPROM socket for 2716, 2732/2764 and 27128.

£59.95

## MEMIC-81

4K CMOS RAM with lithium battery. Easy SAVEing. 10yr storage and instant retrieval of programs.

£29.95



UK. VAT extra. No VAT on exports P+P UK Free  
Europe +5% — Overseas +10% TLX 81574 CML

Cambridge Microelectronics Ltd. One Milton Rd. Cambridge CB4 1UY

tel (0223) 314 814

# WANT £100???

SOLVE

OPERATION NIGHTINGALE

## AND WIN £100!

It's up to you now. No one else can do it. Agent Jameson has mysteriously disappeared so you must succeed in smashing the evil drugs syndicate operating in London. Your code name is Nightingale.

Good luck Nightingale!

Mail order now operation Nightingale, a text/graphic adventure.

£6.99 inc p&p SPECTRUM 48K

Send for your copy NOW! for early entry in the competition!

Send cheque or PO to:

SS Softly Softly

Dept SU

36 Broadlands Road

Bromley

Kent BR1 5DE

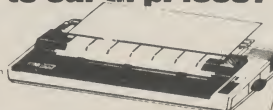
Tel: 01-857 7114

Dealer enquiries welcome

## DATA STAR QUALITY

At down to earth prices.

When it comes to printers, whichever way you look at it, we've got the lowest prices, the widest range and the best back-up service in the country. What you won't get from us, are special gifts, or false promises — just honest value and a fully guaranteed after-sales service.



## SPECIAL OFFERS

Brother — M1009 £173.86 + VAT = £199.95  
50cps • bi-directional • logic seeking • 96 chars plus international and graphics • 9 x 9 matrix

Gemini 10X £189.95 + VAT = £218.44  
120 cps • bi-directional • logic seeking • friction, tractor and roll holder standard • down loadable characters • ultra high resolution 80 cols. • IBM PC version available.

Canon PW 1080A £265 + VAT = £304.75  
Near letter quality • 160 cps • bi-directional • 96 chars plus graphics • 5 print sizes • 11 x 9 matrix • 23 x 18 NLQ matrix

## COMPLETE RANGE

### DOT MATRIX

Canon PW 1080A £265 + VAT = £304.75

Epson RX80 £198.95 + VAT = £228.79

Epson RX80 F/T £228.95 + VAT = £263.29

Epson FX80 £319.95 + VAT = £367.94

Canon PW 1156A £359.95 + VAT = £413.94

Star Gemini 10x £189.95 + VAT = £218.44

Star Delta 10 £319.95 + VAT = £367.94

Star Radix 10 £498.95 + VAT = £573.79

New Star printer range now available. Please call for details

### DAISYWHEEL PRINTERS

Brother HR15 Ring for prices

36 buffer

Subscripts & superscripts

Proportional spacing

Two colour printing

Automatic duplex

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

£373.75

Cables • Paper • Ribbons • Sheet and tractor feeders

• Interfaces

If you have any technical queries or want our latest prices

please telephone:

Credit card hot line ... 01-482 1711

Please add £10 for delivery.

We guarantee 48 hour

delivery from payment

Personal callers welcome

We're at the junction of

Camden Road, near the

railway bridge. Anytime

9.00am to 6.00pm Monday

to Friday 10.00am to

1.00pm Sunday

Export and dealer enquiries

welcome. Post your order

with cheque to



## Datastar Systems UK

Unicom House, 182 Royal College Street, London NW1 9NN

Telex 295 931 Unicom G Telephone 01-482 1711



continued from page 97

The graphics on the review copy were very simple although a call to the Workshop gave me reassurance that these were not the final versions. Neither was the Examine function very productive, except with specific objects, and it could have more variation in its response.

If you enjoyed **Tower of Despair** then you will no doubt relish the sequel.

## Ashkeron

Still in the worlds of wizardry we come finally to **Ashkeron**.

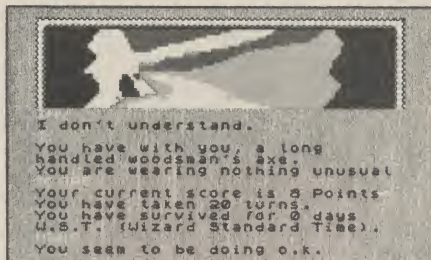
The wizard has purloined poor Princess Zeraphina's dowry of five great treasures. Without them her marriage will be ill-starred and will bring ruin to the bucolic paradise of Ashkeron. You are Stephen the Blacksmith and have vowed to enter the sorcerer's lair to recover the sparklers.

You might be forgiven for thinking this was an **Avalon** style graphics game - 'walk-thru graphics' on the cover could suggest this. In fact the game is a text adventure with graphics which blend into the next location picture when you move. That hap-

pens with a machine-gun roaring which adds nothing to the game.

Text input is standard verb-noun and you can choose between a game where the objects always begin in the same place or a randomised version. The game is in real time so events will progress whether you do or not.

The castle is quite large and com-



plex though often you can do nothing with the rooms - in the clock tower you cannot examine either the tower or the clock. Other characters can be spoken to and the castle staff can occasionally be helpful. The Examine function can be odd - I picked up a candle, tried to examine it and was told it was not there!

The trouble with games which expect you to find treasure is that there is no other incentive to carry on, especially if careful exploration only results in information about things the

programmers consider important.

This is not my type of game. It is not enormous - only 125 locations - and it doesn't have the detail which provides a compelling atmosphere. Nevertheless, it is well-made and attractively presented. The prospect of a £25 prize each month for the highest score may induce you into **Ashkeron**. Not me - I'm going to get back to Fag End and Boggiton.

**Bored of the Rings**  
Publisher Delta 4 Memory 48K  
Price £5.95 (£8.95 microdrive)  
★★★★

**Return of the Joystick**  
Publisher Delta 4 Memory 48K  
Price £4.95 (£6.95 microdrive)  
★★★

**Runestone**  
Publisher Games Workshop  
Memory 48K Price £7.95  
(includes m/d conversion)  
★★★★

**Key of Hope**  
Publisher Games Workshop  
Memory 48K Price £7.95  
★★★★

**Ashkeron**  
Publisher Mirrorsoft Memory 48K  
Price £5.95  
★★★

### COMPUTERS

Sinclair Spectrum + ..... £129.95  
Sinclair QL ..... £399.00

### SOFTWARE

Full range of games and educational software,  
catalogue available on request  
for most leading machines  
(Please send SAE Normal Postage)

### ACCESSORIES

Power Packs ..... £8.95  
Sanyo DR101 Data Recorders ..... £34.95  
Sanyo DR202 Data Recorders ..... £41.95  
Network Data Recorders ..... £19.95  
Datex DR6 ..... £24.95  
Dk'tronics Lightpen ..... £19.95  
Currah Speech ..... £29.95  
Currah Slot ..... £14.95  
Dk'tronics 3 Channel Sound Synthesiser ..... £29.95  
Rotronics Carrying Case ..... £34.95

### PRINTERS

Alphacom 32 ..... £69.95  
Timex Thermal ..... £79.95  
Brother HR5 Thermal ..... £159.95  
Brother M1009 ..... £199.95  
Tractor Feed for Brother M1009 ..... £17.50  
Mannesmann Tally MT80+ ..... £242.95\*  
Canon PW1080A ..... £375.95\*

\*Inc Free Lead

# NEW HORIZON

## COMPUTER CENTRES LTD.

### Mail Order Service

Sinclair Flat Screen TV £97.95

### KEYBOARDS

Saga Emperor ..... £49.95  
Dk'tronics + Dual Port ..... £38.00  
Lo-Profile ..... £44.95

### MICRODRIVES

Micro-drive Expansion pack ..... £99.95  
ZX - Microdrive ..... £49.95  
Microdrive Cartridges ..... £1.99

### SPECTRUM REPAIRS

£21.00 including all parts and labour  
(fast reliable service)

### JOYSTICKS

Quickshot II ..... £9.95  
Gunshot II ..... £11.95  
Arcade (Steel Shaft) ..... £17.95  
Arcade Turbo ..... £22.95  
Joycard ..... £9.95  
Superchamp ..... £9.95  
Competition Pro ..... £19.95  
Quickshot II with Interface ..... £17.95

### INTERFACES

RAM Turbo ..... £22.95  
Dk'tronics Programmable ..... £22.95  
Dk'tronics Dual Port ..... £13.00  
RAM MkII ..... £9.95  
AGF Protocol Programmable ..... £29.95  
Com Com ..... £19.95

### WAFADRIVE

Rotronics Wafadrive ..... £128.95  
Wafadrive Cartridges 16K ..... £3.50  
64K ..... £3.65  
128K ..... £3.95

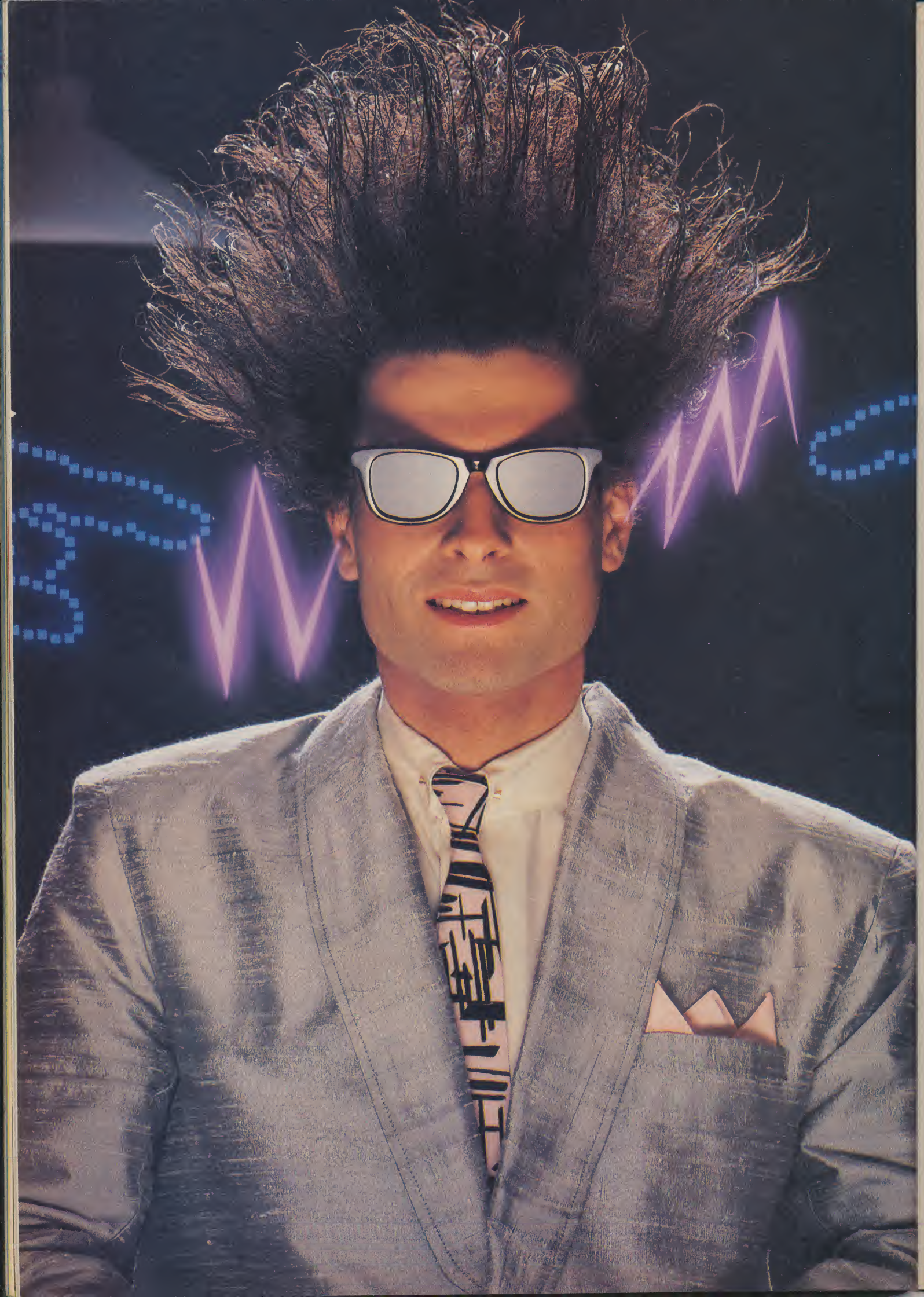
All prices include post and packing  
Cheques + PO's made payable to:  
**NEW HORIZON COMPUTER CENTRES LTD**

**ACCESS AND BARCLAYCARD BY TELEPHONE WITH PLEASURE**

**DAMALEX HOUSE, 50-52 GEORGE STREET, WALSALL WS1 1RS**  
**TELEPHONE 0922 30701 24HRS SERVICE**









# Nice Password. Shame about the Identity.

It's a unique combination.

Your Special Identity Number and Personal Password. The valuable key to huge databases teeming with activity, set on our Mainframes across the nation.

On Micronet 800, you're a valued individual, adding your own special flavour and personality to the database.

Take our exciting new "Gallery". You control your personal screens for all to see. The intriguing "Chatline" public conversation service gives you freedom to express your views and meet some remarkable people.

All part of a tremendous Communications section that networks you to 50,000 Micronet and Prestel users across the country. Try Tele-shopping, or interview celebrities live on "Celebrity Chatline" every Wednesday night.

And there's FREE (& instant) National Electronic Mail, plus International Telex, and the Contact and SwapShop bulletin boards.

Get computer news first on Micronet's daily (and controversial)

"Newsflashes" and read up on the latest reviews and courses. Feast from our regularly changing menu of programs to download straight into your micro - absolutely free.

You also get access to Educational Computing's "School Link" and Prestel's huge 300,000 page database, including world news, business & share bulletins and optional homebanking. For only £16.50 per quarter, that's less than the price of a daily paper!

Micronet is unique amongst networks and bulletin boards as it keeps your phone costs very low with

special local\* rate calls whenever you connect up - that's around 40p for a whole hours entertainment each evening.

The only accessory you need is a Modem, to get the best value for money around in micro communications.

Fill in the coupon for the full facts and send to Micronet 800, 8 Herbal Hill, London EC1R 5EJ. But be warned, Micronet 800 is a 'living' service with ever-expanding features. So maybe you'd be better to call in at your local Micronet 800 Action Station. There are thousands of Micronetters waiting to meet you!



To: MICRONET 800, Durrant House, 8 Herbal Hill,  
London EC1R 5EJ. Telephone 01-278 3143.  
Please send me the full facts about Micronet 800.

Name \_\_\_\_\_

Make/Model of Micro \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

\* For 98% of telephone users.  
Prestel is a trademark of British Telecommunications plc.  
On Prestel



# See Micronet 800 in action!

See Micronet at John Lewis, main Boots, Laskys or your local computer store.

<p><b>AVON</b>  <b>Bath.</b> Boots, 1 Marchants Passage, Southgate. Tel: 0225 64402.  <b>Bristol.</b> Avon Computer Rentals, 16 West Street, Old Market. Tel: 0272 550600.  <b>Bristol.</b> Boots, 59 Broadmead. Tel: 0272 293631.  <b>Bristol.</b> Laskys, 16-20 Penn Street. Tel: 0272 20421.  <b>Clevedon.</b> Computer Centre, 12A Old Street, Clevedon. Tel: 0272 879514.</p>	<p><b>ESSEX</b>  <b>Basildon.</b> Basildon Software Centre, 78-80 Liberty Shopping Hall, East Square. Tel: 0268 27922.  <b>Braintree.</b> Mirage Microcomputers Ltd, 24 Bank Street. Tel: 0376 48321.  <b>Chelmsford.</b> Maxton Hayman, 5 Bromfield Road. Tel: 0245 354595.  <b>Chelmsford.</b> Way In Computers, 7 Village Square. Tel: 0245 467858.  <b>Colchester.</b> Boots, 5-6 Lion Walk. Tel: 0206 577303.  <b>Colchester.</b> Colchester Computer Centre, 3a Short Wyre Street. Tel: 0206 47242.  <b>Grays.</b> H. Reynolds, 28a Southend Road. Tel: 0375 31641.  <b>Harlow.</b> Harlow Computer Centre, 17 Staple Tye. Tel: 0279 22846.  <b>Hornchurch.</b> Compitel Computer Systems, 112a North Street. Tel: 0402 446741.  <b>Ilford.</b> Boots, 177-185 High Road. Tel: 01-553 2116.  <b>Romford.</b> Software Plus, 72 North Street. Tel: 70 65271.  <b>Southend-on-Sea.</b> Computarama, 88 London Road. Tel: 0702 335443.  <b>Southend-on-Sea.</b> Computer Centre, 336 London Road. Tel: 0702 337161.  <b>Southend-on-Sea.</b> Estuary Personal Computers, 318 Chartwell North, Victoria Circus Shopping Centre. Tel: 0702 614131.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>NOTTINGHAMSHIRE</b>  <b>Newark.</b> Jacobs Computers, 13 Middle Gate. Tel: 0636 72594.  <b>Nottingham.</b> Telstar, 280 Huntingdon Street. Tel: 0602 505585.  <b>Sutton in Ashfield.</b> HN &amp; L Fisher, 87 Outram Street. Tel: 0623 54734.  <b>Workshop.</b> Computer Grafix, 32 Bridge Street. Tel: 0909 472248.</p>	<p><b>Cardiff.</b> Randall Cox, 18/22 High Street Arcade. Tel: 0222 397162.  <b>Mold.</b> Clwyd Personal Computers, Unit 19, Daniel Owen Precinct. Tel: 0352 56842.  <b>Newport.</b> Gwent Computers, 92 Chepstow Road. Tel: 0633 841760.  <b>Swansea.</b> Boots, 17 St Marys Arcade, The Quadrant Shopping Centre. Tel: 0792 43461.  <b>Swansea.</b> The Microstore, 35-36 Singleton Street. Tel: 0792 467980.</p>
<p><b>BEDFORDSHIRE</b>  <b>Bedford.</b> Boots, The Harpur Centre, Harpur Street. Tel: 0234 56231.  <b>Luton.</b> Datasine, Delaport House, 57 Guildford Street. Tel: 0582 455860.</p>	<p><b>BERKSHIRE</b>  <b>Slough.</b> MV Games, 245 High Street. Tel: 75 21594.</p>	<p><b>LONDON</b>  <b>W1.</b> Computers of Wigmore Street, 104 Wigmore Street. Tel: 01 486 0373.  <b>W1.</b> Laskys, 42 Tottenham Court Road. Tel: 01-636 0845.  <b>W1.</b> Lion House, 227 Tottenham Court Road. Tel: 01-637 1601.  <b>W1.</b> Sonic Foto Micro Centre, 256 Tottenham Court Road. Tel: 01-580 5826.  <b>W1.</b> Tomorrows World Today, 27 Oxford Street. Tel: 01-439 7799.  <b>W1.</b> Walters Computers, DH Evans, Oxford Street. Tel: 01-629 8800.  <b>W1.</b> Transam Micro Systems, 59-61 Theobalds Road. Tel: 01-405 5240.  <b>W5.</b> Laskys, 18-19 Ealing Broadway Shopping Centre. Tel: 01-567 4717.  <b>W8.</b> Walters Computers, Barkers, Kensington High Street. Tel: 01-937 5432.  <b>SE7.</b> Vic Oddsens Micros, 5 London Bridge Walk. Tel: 01-403 1988.  <b>SE9.</b> Square Deal, 373-375 Footscray Road, New Eltham. Tel: 01-859 1516.  <b>SE15.</b> Castlehurst Ltd, 152 Rye Lane, Peckham. Tel: 01-639 2205.  <b>EC2.</b> Devron Computer Centre, 155 Moorgate. Tel: 01-638 3339.  <b>N14.</b> Logic Sales, 19 The Bourne, The Broadway, Southgate. Tel: 01-882 4942.  <b>N22.</b> Boots, 38-40 High Road, Wood Green. Tel: 01-881 0101.  <b>NW3.</b> Maycraft Micros, 58 Rosslyn Hill, Hampstead. Tel: 01-431 1300.  <b>NW4.</b> Davinci Computer Store, 112 Brent Street, Hendon. Tel: 01-202 2272.  <b>NW7.</b> Computers Inc, 86 Golders Green. Tel: 01-209 0401.  <b>NW10.</b> Technomatic, 17 Burnley Road, Wembley. Tel: 01-208 1177.</p>	<p><b>OXFORDSHIRE</b>  <b>Abingdon.</b> Ivor Fields Computers, 21 Stern Street. Tel: 0235 21207.  <b>Banbury.</b> Computer Plus, 2 Church Lane. Tel: 0295 55890.  <b>Oxford.</b> Absolute Sound &amp; Video, 19 Old High Street, Headington. Tel: 0865 65661.  <b>Oxford.</b> Science Studio, 7 Little Clarendon Street. Tel: 0865 54022.</p>	<p><b>WARWICKSHIRE</b>  <b>Coventry.</b> Coventry Micro Centre, 33 Far Gosford Street. Tel: 0203 58942.  <b>Coventry.</b> Impulse Computer World, 60 Hertford Street Precinct. Tel: 0203 553701.  <b>Coventry.</b> JBC Micro Services, 200 Earlsdon Avenue, North Earlsdon. Tel: 0203 73813.  <b>Coventry.</b> Laskys, Lower Precinct. Tel: 0203 27712.  <b>Leamington Spa.</b> IC Computers, 43 Russell Street. Tel: 0926 36244.  <b>Leamington Spa.</b> Leamington Hobby Centre, 121 Regent Street. Tel: 0926 29211.  <b>Nuneaton.</b> Micro City, 1a Queens Road. Tel: 0203 382049.  <b>Rugby.</b> O.E.M., 9-11 Regent Street. Tel: 0788 70522.</p>
<p><b>BUCKINGHAMSHIRE</b>  <b>Bletchley.</b> RAMS Computer Centre, 117 Queensway. Tel: 0908 647744.  <b>Chesham.</b> Reed Photo &amp; Computers, 113 High Street. Tel: 0494 783373.</p>	<p><b>GLOUCESTER</b>  <b>Cheltenham.</b> Laskys, 206 High Street. Tel: 0242 570282.  <b>Cheltenham.</b> Screen Scene, 144 St. Georges Road. Tel: 0242 528979.  <b>Gloucester.</b> Boots, 38-46 Eastgate Street. Tel: 0452 423501.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>SCOTLAND</b>  <b>Aberdeen.</b> Boots, 133-141 Union Street. Tel: 0224 585349.  <b>Edinburgh.</b> Boots, 101-103 Princes Street. Tel: 031-225 8331.  <b>Glasgow.</b> Boots, 200 Sauchiehall Street. Tel: 041-332 1925.  <b>Glasgow.</b> Boots, Union Street and Argyle Street. Tel: 041-248 7387.  <b>Glasgow.</b> Tom Dixon Cameras, 15-17 Queen Street. Tel: 041-204 0826.</p>	<p><b>WEST MIDLANDS</b>  <b>Birmingham.</b> Boots, City Centre House, 16-17 New Street. Tel: 021-643 7582.  <b>Birmingham.</b> Laskys, 19-21 Corporation Street. Tel: 021-632 6303.  <b>Dudley.</b> Central Computers, 35 Churchill Precinct. Tel: 0384 238169.  <b>Stourbridge.</b> Walters Computer Systems, 12 Hagley Road. Tel: 0384 370811.  <b>Walsall.</b> New Horizon, 1 Goodall Street. Tel: 0922 24821.  <b>West Bromwich.</b> DS Peakman, 7 Queens Square. Tel: 021-525 7910.</p>
<p><b>CAMBRIDGESHIRE</b>  <b>Cambridge.</b> Boots, 65-67 Sidney Street and 28 Petty Curry Street. Tel: 0223 350213.  <b>Cambridge.</b> Cambridge Computer Store, 4 Emmanuel Street. Tel: 0223 358264.  <b>Peterborough.</b> Logic Sales, Unit 6, Midgate Parade, Peterborough. Tel: 0733 49696.  <b>Peterborough.</b> Boots, 40-42 Bridge Street, Queensgate. Tel: 0733 65352.</p>	<p><b>HAMPSHIRE</b>  <b>Basingstoke.</b> Fishers, 2-3 Market Place. Tel: 0256 22079.  <b>Petersfield.</b> Foly Micros, 45 Chapel Street. Tel: 0730 66841.  <b>Portsmouth.</b> Micro Choice, 159 Havant Road, Drayton. Tel: 0705 327591.  <b>Portsmouth.</b> RDS Electrical, 157-161 Kingston Road. Tel: 0705 812478.  <b>Southampton.</b> Business Electronics, Micromagic At Atkins, 7 Civic Centre Road. Tel: 0703 25903.  <b>Waterloo.</b> GB Microland, 7 Queens Parade, London Road. Tel: 0705 259911.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>SHROPSHIRE</b>  <b>Shrewsbury.</b> Clairmont Enterprises, Hills Lane. Tel: 3647 52949.  <b>Shrewsbury.</b> Computarama, 13 Castlegate. Tel: 0743 60528.  <b>Telford.</b> Computer Village Ltd, 2/3 Hazeldine House, Central Square. Tel: 0952 506771.  <b>Telford.</b> Telford Electronics, 38 Mall 4. Tel: 0952 504911.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>CHESHIRE</b>  <b>Chester.</b> Boots, 47-55 Foregate Street. Tel: 0244 28421.  <b>Chester.</b> Computer Link, 21 St. Werburgh Street. Tel: 0244 316516.  <b>Crewe.</b> Midshires Computer Centre, 68-78 Nantwich Road. Tel: 0270 211086.  <b>Hyde.</b> C Tech Computers, 184 Market Street. Tel: 061-366 8223.  <b>Macclesfield.</b> Camera Computer Centre, 118 Mill Street. Tel: 0625 27468.  <b>Macclesfield.</b> Computer Centre, 68 Chestergate. Tel: 0625 618827.  <b>Marple.</b> Marple Computer Centre, 106 Church Lane. Tel: 061-447 9933.  <b>Wilmslow.</b> Wilmslow Micro Centre, 62 Grove Street. Tel: 0625 530890.</p>	<p><b>HERTFORD</b>  <b>Potters Bar.</b> The Computer Shop, 107 High Street. Tel: 0707 44417.  <b>Stevenage.</b> DJ Computers, 11 Town Square. Tel: 0438 65501.  <b>Watford.</b> SRS Microsystems, 94 The Parade, High Street. Tel: 0923 26602.  <b>Welwyn Garden City.</b> DJ Computers, 40 Frertherne Road. Tel: 0707 32844.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>STAFFORDSHIRE</b>  <b>Newcastle-under-Lyme.</b> Computer Cabin, 24 The Parade, Silverdale. Tel: 0782 636911.  <b>Stafford.</b> Computarama, 59 Foregate Street. Tel: 0785 41899.  <b>Stoke-on-Trent.</b> Computarama, 11 Market Square Arcade, Hanley. Tel: 0782 268524.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>CLEVELAND</b>  <b>Darlington.</b> Darlington Computer Shop, 75 Bondgate. Tel: 0325 487478.  <b>Middlesbrough.</b> Boots, 88-90 Linthorpe Road, The Cleveland Centre. Tel: 0642 249616.</p>	<p><b>HUMBERSIDE</b>  <b>Beverley.</b> Computing World, 10 Swaby's Yard, Dyer Lane. Tel: 0482 881831.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>SUFFOLK</b>  <b>Bury St. Edmunds.</b> Boots, 11-13 Cornhill. Tel: 0284 701516.  <b>Bury St. Edmunds.</b> Suffolk Computer Centre, 1-3 Garland Street. Tel: 0284 705503.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>CUMBRIA</b>  <b>Kendal.</b> The Kendal Computer Centre, Stramongate. Tel: 0539 22559.  <b>Penrith.</b> Penrith Communications, 14 Castlegate. Tel: 0768 67146.  <b>Whitehaven.</b> P D Hendren, 15 King Street. Tel: 0946 2063.  <b>Workington.</b> Technology Store, 12 Finkle Street. Tel: 0900 66972.</p>	<p><b>KENT</b>  <b>Ashford.</b> DGH, 10 North Street. Tel: 0233 32597.  <b>Ashford.</b> Geerings of Ashford, 80 High Street. Tel: 0233 33366.  <b>Bromley.</b> Boots, 148-154 High Street. Tel: 01-460 6688.  <b>Bromley.</b> Computers Today, 31 Market Square.  <b>Chatham.</b> Boots, 30-34 Wilmott Square, Pentagon Centre. Tel: 0634 405471.  <b>Gravesend.</b> Gravesend Home Computers, 39 The Terrace. Tel: 0474 23871.  <b>Gillingham.</b> Regal Software Supplies, 49 High Street. Tel: 0634 579634.  <b>Maidstone.</b> Boots, 56-62 King Street. Tel: 0622 53912.  <b>Maidstone.</b> Kent Micros, 51 Union Street. Tel: 0622 52784.  <b>Rainham.</b> Microway Computers, 39 High Street. Tel: 0634 376702.  <b>Sevenoaks.</b> Ernest Fielder Computers, Dorset Street. Tel: 0732 456800.  <b>Shortlands.</b> The Village House of Computers, 87 Beckenham Lane. Tel: 01-460 7122.  <b>Sittingbourne.</b> Computer Plus, 65 High Street. Tel: 0795 25677.  <b>Tunbridge Wells.</b> Modata Computer Centre, 28-30 St. Johns Road. Tel: 0892 41555.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>SURREY</b>  <b>Bagshot.</b> P &amp; H Electronics, 22-24 Guildford Road. Tel: 0276 73078.  <b>Croydon.</b> Laskys, 77-81 North End. Tel: 01-681 8445.  <b>Croydon.</b> The Vision Store, 53-59 High Street. Tel: 01-686 6362.  <b>Croydon.</b> The Vision Store, 96-98 North End. Tel: 01-681 7539.  <b>South Croydon.</b> Concise Computer Consultants, 1 Carlton Road. Tel: 01-681 6842.  <b>Epsom.</b> The Micro Workshop, 12 Station Approach. Tel: 0372 721533.  <b>Guildford.</b> Walters Computers, Army &amp; Navy, 105-111 High Street. Tel: 0483 68171.  <b>Wallington.</b> Surrey Micro Systems, 53 Woodcote Road. Tel: 01-647 5636.  <b>Woking.</b> Harpers, 71-73 Commercial Way. Tel: 0486 225657.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>DERBYSHIRE</b>  <b>Alfreton.</b> Gordon Harwood, 67-71 High Street. Tel: 0733 832078.  <b>Chesterfield.</b> Boots, 35-37 Low Pavement, Market Place. Tel: 0246 203591.  <b>Chesterfield.</b> Computer Stores, 14 Stephenson Place. Tel: 0246 208802.  <b>Derby.</b> Boots, 1 Devonshire Walk. Tel: 0332 45886.</p>	<p><b>LANCASHIRE</b>  <b>Blackpool.</b> Blackpool Computers Store, 179 Church Street. Tel: 0253 20239.  <b>Burnley.</b> IMO Business Systems, 39-43 Standish Street. Tel: 0942 44382.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>SUSSEX</b>  <b>Bexhill-on-Sea.</b> Computerware, 22 St. Leonards Road. Tel: 0424 223340.  <b>Brighton.</b> Boots, 129 North Street. Tel: 0273 27088.  <b>Brighton.</b> Gamer, 71 East Street. Tel: 0273 728681.  <b>Brighton.</b> Laskys, 151-152 Western Road. Tel: 0273 725625.  <b>Crawley.</b> Gatwick Computers, 62 The Boulevard. Tel: 0293 37842.  <b>Crawley.</b> Laskys, 6-8 Queensway. Tel: 0293 544622.  <b>Eastbourne.</b> Boots, 15 Eastbourne Armdale Centre. Tel: 03232 7742.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>DEVON</b>  <b>Exeter.</b> Boots, 251 High Street, Tel: 0392 32244.  <b>Exeter.</b> Open Channel, Central Station, Queen Street. Tel: 0392 218187.  <b>Paignton.</b> Computer Systems Ltd, 35 Hyde Road. Tel: 0803 524284.  <b>Plymouth.</b> Syntax, 76 Cornwall Street. Tel: 0752 28705.  <b>Seaton.</b> Curtis Computer Services, Seaton Computer Shop, 51c Harbour Road. Tel: 0297 22347.  <b>Tiverton.</b> Actron Microcomputers, 37 Bampton Street. Tel: 0884 252854.</p>	<p><b>LANCASHIRE</b>  <b>Blackpool.</b> Blackpool Computers Store, 179 Church Street. Tel: 0253 20239.  <b>Burnley.</b> IMO Business Systems, 39-43 Standish Street. Tel: 0942 44382.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>TYNE &amp; WEAR</b>  <b>Newcastle-upon-Tyne.</b> Boots, Eldon Square. Tel: 0632 329844.  <b>Newcastle-upon-Tyne.</b> Laskys, 6 Northumberland Street. Tel: 0632 617224.  <b>Newcastle-upon-Tyne.</b> RE Computing, 12 Jesmond Road. Tel: 0632 815580.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>
<p><b>DORSET</b>  <b>Bournemouth.</b> Lansdowne Computer Centre, 1 Lansdowne Crescent, Lansdowne. Tel: 0202 290165.  <b>Dorchester.</b> The Paper Shop, Kings Road. Tel: 0305 64564.  <b>Poole.</b> Lansdowne Computer Centre, 14 Armdale Centre. Tel: 0202 670901.</p>	<p><b>LANCASHIRE</b>  <b>Blackpool.</b> Blackpool Computers Store, 179 Church Street. Tel: 0253 20239.  <b>Burnley.</b> IMO Business Systems, 39-43 Standish Street. Tel: 0942 44382.</p>	<p><b>LEICESTERSHIRE</b>  <b>Preston.</b> 4Mat Computing, 67 Friargate. Tel: 0772 561952.  <b>Preston.</b> Laskys, 1-4 Guildhall Arcade. Tel: 0772 59264.  <b>Wigan.</b> Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.</p>	<p><b>WALES</b>  <b>Aberdare.</b> Inkey Computer Services, 70 Mill Street, The Square, Trecynon. Tel: 0685 881828.  <b>Aberystwyth.</b> Aberdara at Galloways, 23 Pier Street. Tel: 0970 615522.  <b>Cardiff.</b> Boots, 26 Queens Street &amp; 105 Frederick Street. Tel: 0222 31291.</p>	<p><b>YORKSHIRE</b>  <b>Bradford.</b> Boots, 11 Darley Street. Tel: 0274 390891.  <b>Leeds.</b> Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.  <b>Sheffield.</b> Laskys, 58 Leopold Street. Tel: 0742 750971.  <b>York.</b> York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.</p>

Phone 01-278 3143 for your free information pack now!

Micronet 800, 8 Herbal Hill, London EC1





# FREDERICK FORSYTH THE FOURTH PROTOCOL

... the chilling  
world of counter-  
espionage ...

TOP SECRET  
SOFTWARE



## THE GAME

Your agent has finally penetrated the subversive organisation which plans to explode a nuclear bomb at an air force base. Unfortunately the bad guys are on to her, and she has been forced to improvise a simple code to tell you what will happen and how to stop it.

You will have to crack the code to discover the truth. When you have done so, write the combination number which will disarm the bomb on a postcard and send it to The Fourth Protocol Competition, at *Sinclair User*, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU by Friday, July 19.

The first 10 correct entries pulled from the post bag after that date will win the book/game package, and the next 40 will win the game.

Employees of EMAP and Century-Hutchinson, their friends and associates, are not allowed to enter.

# The Fourth Protocol

Fifty copies of the classic spy adventure to be won by successful code breakers

BASED on the best-selling spy novel by Frederick Forsyth, **The Fourth Protocol** is a complex three-part adventure, destined to become one of the all-time classic games for the Spectrum.

A crack Soviet agent has been placed under cover in Britain to undermine the NATO alliance. You are MI5 investigator John Preston, working blind to uncover a plot of chilling devastation, racing against an unknown deadline. You have the resources of surveillance networks and the vast databanks of MI5's central communications computer to piece together the deadly jigsaw.

The game, from Century-Hutchinson, is icon-driven, making use of multi-layered windows depicting memos, reports, voice-prints and files, as well as detailed maps. In the final, graphic, sequence you have seconds only in which to defuse the weapon, and to do so successfully lightning reflexes must be combined with information discovered earlier in the game.

**The Fourth Protocol** is due to be released on June 20 and will be available from all leading high street stores, priced £12.95. Boots is offering a special package of the game together with the book, for £14.95.

Century-Hutchinson Computer Publishing is offering 10 first prizes of the book/game package, and 40 second prizes of the game alone, to the winners of our competition.

PAU JKKJOBPBJI ACO EMJQYAP RJMVCMT PAU TCPU JR PAU

USUIP PAU KGCI BO PJ TUPJICPU PAU EJHE CP HBTIBYAP

PJIBYAP EX PAU PBHU XJQ YUP PABO HUOOCYU PAU EJHE

VBGG CGMUCTX EU BI KGCNU CP PAU ECOU TJ IJP

CPPUHKP PJ MUHJSU BP QIPBG BP ACO EUUI TBOCMHUT PAU

NJHEBICPBJI BO RJQM OUSUI ZUMJ PAMUU YJJT GQNF



**G****INSIDE THE JULY ISSUE...**

Sagesoft Integrated Accounts Package

QL Caverns — the ultimate game?

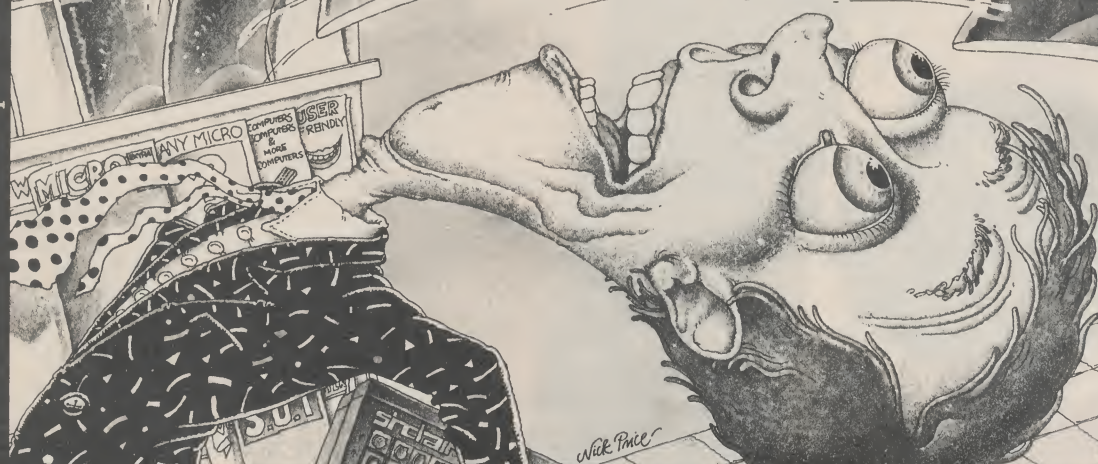
Psion Organiser &amp; Brother Comms

Readership Survey

**ON SALE 21ST JUNE**

95p EVERY MONTH

95p EVERY MONTH



SINCLAIR'S SUPERMICRO

**QL  
USER****QL USER — THE ONLY MAGAZINE FOR QL OWNERS AND ENTHUSIASTS.**

# OMNICALC 2

**★ OMNICALC 2 £14.95**

THE most successful spreadsheet available for the Spectrum.

Featuring:

- Full support for the Microdrive/net/RS232 facilities within Interface 1.
- Inbuilt graphics to draw histograms from your data.
- Insert/Delete column and row functions.
- Separate work area to enable transfer of data between spreadsheets (for consolidation etc).
- Can be used with or without microdrives, with a full-size printer.
- Complete with comprehensive manual.

**★ OMNICALC 2 EXTENSION KIT £6.95**

- Run your program from disk; with the extension kit you can incorporate additional commands. Suitable for most available disk drives, including wafadrives. Also can be used to add in special printer commands.
- Screen-dump routine; designed primarily for Interface 1 owners with Epson-type printers, this routine has single and double size facilities and can be used both to print the histograms produced by Omnicalc 2 and general screen-copy routines in other programs.
- Formula print-out routine; by popular request. Print-outs of the formula used in every cell of the spreadsheet.

**MICROSPHERE**MICROSPHERE COMPUTER SERVICES LTD · 72 ROSEBERY ROAD  
LONDON N10 2LA · TELEPHONE 01-883 9411



# Andrew Hewson unravels code hidden in the memory map

**M**OST READERS will know that the Spectrum and Spectrum Plus are virtually identical internally. Unfortunately, Sinclair has completely rewritten the book supplied with the machine. Previously *ZX Spectrum Basic Programming* described the machine in some detail. I have always been careful to refer to this book in the certain knowledge that every reader has a copy.

Purchasers of the new machine are provided instead with the *ZX Spectrum Plus User Guide*. It is undoubtedly a prettier book – lots of colour screen shots and other nice touches. However, it contains much less hard information than its predecessor. There is no list of system variables and their functions. Nor is there a description of variable structures. Hence readers will have to forgive me if I labour points which could more conveniently be covered by reference to the original manual.

The topic this month is based on a letter from Simon Halford of Rotherham. He writes: **I read in Helpline, March 1985, about PEEK and I used it to look at my Basic programs, but I can't understand the codes. Can you explain?**

The method used by the Spectrum to store Basic programs is complicated so I shall approach the explanation in three stages. First we need to work out where to look in memory to find the Basic program. Then we need to display a part of a program on the screen in its 'raw' form – that is, in the form of the underlying numeric codes. Finally we must work out the relationship between the codes and the Basic program as it is normally understood – as it is displayed by the LIST command.

Spectrum programs are stored in the area of memory designated by the PROG and VARS system variables. Those variables are stored in memory

```
10 REM Peek program
20 FOR I=23755 TO 23772
30 PRINT I,PEEK I
40 NEXT I
```

**Table 1. A Spectrum program to PRINT the contents of the first 18 locations in the Basic program area.**



## PEEKing into a Basic RAM

at addresses 23635 and 23636 (PROG) and addresses 23627 and 23628 (VARS). The values of those variables can be inspected using the PEEK command.

Thus, to identify the memory location which holds the first byte of a Basic program, enter the line

```
PRINT PEEK 23635+256★PEEK 23636
```

The value PRINTed will be 23755 except when an Interface 1 is attached to the machine.

To obtain the address of the last memory location used by a Basic program enter the line

```
PRINT PEEK 23627+256★PEEK 24628-1
```

The value PRINTed will of course vary, depending on the length of the current Basic program.

Having worked out the correct area of memory the next step is to enter a short Basic program to look at the contents of that area and PRINT the codes stored there. The program in table one will suffice for this purpose. It PRINTs the contents of the first 18 bytes of the Basic program area. I have

chosen to display 18 bytes for two reasons: 1 – the resulting 18 line display fits comfortably on the Spectrum screen; and 2 – the first line of the program, line 10, happens to occupy 18 bytes in the Basic program area. Thus the program displays the memory contents corresponding to the complete first program line.

Table two shows the display produced by the Basic program. The first two bytes are 0 and 10 respectively and they tell the computer that the number of this program line is 10 because

$0★256+10=10$

To prove that try POKEing other numbers into either of those locations and then LISTing the program. For example

$POKE 23755,14$

will change the line number to 3594 because

$14★256+10=3594$

When you have tried this a couple of times with different numbers it is best to POKE the original numbers 0 to 10 back into those locations otherwise

*continued on page 106*



continued from page 105

you may get into a muddle.

It is interesting that the order in which those two numbers are stored is the reverse of the usual Z80 convention. In this case the most significant

23755	0
23756	10
23757	14
23758	0
23759	234
23760	80
23761	101
23762	101
23763	107
23764	32
23765	112
23766	114
23767	111
23768	103
23769	114
23770	97
23771	109
23772	13

**Table 2. The form in which the program line**  
**10 REM Peek program**  
**is held in the program area.**

byte – ie the byte which determines whether the result is going to be large or small – precedes the least significant byte – ie the byte which adds a little bit at the end of the calculation.

I have always assumed that this quirk is a hangover from Sinclair's original home computer, the ZX80. As the system clearly works the manufacturers have not bothered to change it during the development of first the ZX-81 and then the ZX Spectrum.

The next two memory locations, 23757 and 23758, together record the amount of space occupied by the remainder of the line. In this case the whole of the line occupies 18 bytes but two bytes are used to hold the line number and two more bytes are used to hold this length marker, so the length marker contains 14 and 0. The calculation is

Length of remainder of line =  $14 + 256 \star 0 = 14$

Note that this time the numbers are stored in the conventional order with the least significant byte first.

The next byte, 23759, is the meaty bit of the line because it contains the code of the Basic keyword and in this case takes the value 234. Spectrum owners can turn to page 188, appendix A of *ZX Spectrum Basic Programming* to confirm that this is the code for the keyword "REM". Spectrum Plus owners will find the same information conveyed in the table headed 'ZX Spectrum Plus character set' on page 51 of their user guide.

The remaining 13 bytes of the line can all be decoded using Appendix A or the table on page 51. The first 12 will be found to represent the letters and spaces in the comment 'Peek program'. The final byte is described as the ENTER character and it is used to denote the end of a line.

The program in table one can of course be adapted to look at any program line. Try substituting the following for line 10

10 LET a=1443

The display is shown in table three.

Once again the line number 10 is stored in locations 23755 and 23756. The line occupies the same amount of space in memory as its predecessor, that is 18 bytes, and so the remaining length marker is once again set to 14. The fifth location at address 23759 this time contains 241 and reference to appendix A, or the table on page 51 will show that this is the code for the keyword 'LET'. Inspection of the next six bytes will show that they represent the six characters a, =, 1, 4, 4 and 3. None of that is surprising when comparison is made with the line analysed previously.

However, it is surprising that the

23755	0
23756	10
23757	14
23758	0
23759	241
23760	97
23761	61
23762	49
23763	52
23764	52
23765	51
23766	14
23767	0
23768	0
23769	163
23770	5
23771	0
23772	13

**Table 3. The form in which the line**  
**10 LET a=1443**  
**is stored in the program area.**

next location, 23766, does not contain the ENTER character – code 13 – indicating that the end of the line has been reached. Instead it contains the value 14 and reference to the manuals will show that this code is coyly referred to as 'number' without further

er explanation.

The explanation notable in its absence is that numbers, excluding line numbers, in Basic programs are stored not once but twice in two forms. The first time they are stored they are in character form and we have already seen how to look up the codes in the programming manuals to obtain the relevant characters. The second time they are held in a numeric form, a form which the user is normally completely unaware of.

The numeric form always requires five bytes of memory. In our example the number is the whole number, or integer, 1443 and it is represented by the contents of the locations 23767 to 23771 which contain 0,0,163,5,0 respectively. The calculation to recreate a whole number from its five byte numeric form is

whole number = PEEK third location +  $256 \star$  PEEK fourth location  
In this case the third and fourth locations contain 163 and 5; a quick check shows that as expected

$1443 = 163 + 256 \star 5$

Non-integer numbers are held in so-called floating point form as an exponent in the first location followed by a mantissa stored in the subsequent four locations. That is

number = mantissa  $\star$   $\uparrow$  exponent  
The first location of the mantissa is also used to determine the sign of the number.

If the location contains a value in the range 0 to 127 then the number is positive and if it is in the range 128 to 255 then the number is negative. Table four lists a short program to reconstruct a non-integer number from its five byte form.

Why does the Spectrum use this wasteful method of storing all numbers twice – a method incidentally – also used on the ZX-81? The answer is simply that it enables Basic programs to run rather faster than they otherwise would, because it is the five byte form which is used in all calculations and not the character form.

The creation of the five byte form takes place when the program line is first stored in memory and is therefore done once only for each line.

```
10 PRINT "Enter the exponent and the four bytes of the mantissa. All entries to lie
between 0 and 255 inclusive."
20 INPUT e,a,b,c,d
30 PRINT "Exponent =" ; e
40 PRINT "Mantissa =" ; a,b,c,d
50 PRINT "The number =" ; (2*(a<128)-)*↑(e-160)*(256*(a+128*(a<128))+b)
★256+c)★256+d)
```

**Table 4. A program to reconstruct a non-integer number from its five byte form.**





SPECTRUM		SPECTRUM		SINCLAIR QL	
A DAY IN THE LIFE	5.25	ADVENTURE LAND	7.50	AREA RADAR CONTROL	9.00
A VIEW TO A KILL	5.50	BLAST COMPILER	19.00	BACKGAMMON	13.00
AIR WOLF	5.25	BLUE MAX	6.00	BCPL METACOMCO	48.00
ALIEN	6.75	BULGE	7.50	BRIDGE PLAYER	15.00
ALIEN 8	7.50	COMBAT LYNX	6.75	CARTRIDGE DOCTOR	18.00
ANIMATED STRIP POKER	5.25	ELITE 911TS	6.00	CASH TRADER	56.00
ARCHON	9.50	ENTREPRENEUR	11.25	CHESS 30	16.00
ARMHEM	7.50	ERIK THE VIKING	7.50	CHESSE MAKER	32.00
ASHKERON	5.00	GIFT OF THE GODS	7.50	ENTREPRENEUR	32.00
BEAVER BOB IN DAM	5.50	HUNCHBACK II	7.25	FORTH COMPUTER ONE	24.00
BETA BASIC	8.25	KONG STRIKES BACK	5.25	GRAPHIOL	28.00
BLOCKBUSTERS	6.00	KUNG FU	5.25	HACKER'S HANDBOOK	4.95
BOULDER DASH	6.00	MATON AY	6.00	LISP METACOMCO	48.00
BRIAN BLOODAXE	6.00	MINI OFFICE	4.50	MONOL	16.00
BRIAN J'S SUPERSTAR	6.00	MINDER	7.50	PASCAL COMPUTER ONE	32.00
BRIDGE PLAYER II	7.50	MONTY IS INNOCENT	5.25	PROJECT PLANNER	32.00
BRUCE LEE	6.00	MONTY'S ON THE RUN	5.50	QL CENTRO INTERFACE	24.00
BUG EYES	5.50	MOON CRESTA	5.25	QL TOOKIT	20.00
BUGGY BLAST	4.50	ONE ON ONE	7.50	SUPER MONITOR	15.00
CATS	5.50	OUT OF THE SHADOWS	6.00	SUP SPRITE GENERATOR	20.00
CAULDRON	6.50	FALL LIL	6.75	SCREEN DUMP	8.00
C COMPILER	19.00	PROJECT FUTURE	5.25	QL ASSEMBLER	32.00
CHUCKIE EGG 2	5.25	PSYCHEDELIA	5.00	WEST	16.00
CONFUSION	5.25	QUILL	11.25	ZKUL	16.00
DALEY'S SUPER TEST	6.00	REALM OF IMPOSSIBILITY	7.50		
DEATH STAR INTERCEPT	6.00	RED ARROWS	7.50		
DEVPAC 3	10.50	REGARDS TO BRADD STREET	6.50		
DOOMDARK'S REVENGE	7.50	RAID HORROR SHOW	7.50		
DRAGONFORD OF AVALON	5.50	ROLAND'S RAT RACE	5.50		
DUN DARACH	8.00	RUNESTONE	6.50		
EMERALD ISLE	5.25	SHADOWFIRE	7.50		
EVERYONE'S A WALLY	7.50	SHERLOCK HOLMES	11.25		
FALCON PATROL II	5.50	SOFTEK'S ARTIST	11.00		
FANTASTIC VOYAGE	5.25	SOFTWARE STAR	5.25		
FORMULA ONE	6.00	SPIDERMAN	7.50		
FOURTH PROTOCOL	11.00	SPY HUNTER	6.00		
FRANKIE GT HOLLYWOOD	7.50	SPY VS SPY	7.50		
GRAND NATIONAL	5.25	STARION	6.00		
GREMLINS	7.50	STARWATCHER	12.00		
GYRON	7.50	STEADY DAVIS SNOOKER	6.00		
HARD HAT TRICK	7.50	SREET HAWK	5.50		
HERBERT'S DUMMY RUN	7.50	SUPERCODE III	11.00		
HISORT PASCAL	19.00	SUPER GRAN	7.50		
ICICLE WORKS	5.25	SUPER PIPELINE II	7.50		
ILLUSTRATOR	11.25	SYSTEM 1500	7.50		
JET SET WILLY II	6.00	TAPPER	6.50		
JOHAN B'S SQUASH	6.00	TASWORD II	11.00		
KET TRILOGY	9.75	TECHNICIAN TED	4.50		
KEY OF HOPE	6.50	THE CHOCOLATE FACTORY	4.50		
KNIGHTLORE	7.50	TIR NA NOG	7.50		
KOMPLEX	7.50	WARLORD	5.50		
KOMPLEX CITY	8.00	WHITE LIGHTNING	11.25		
LEONARDO	8.00	WITCH'S CAULDRON	5.25		
LEVEL 9 ALL	7.50	WIZARD'S LAIR	5.25		
LIGHT MAGIC	11.25	WORLD'S BASEBALL	5.25		
LONG WOLF & ICE PALACE	11.25	WORLDGLER	4.50		
MACHINE CODE TUTOR	7.50	ZAXXON	6.00		
MACHINE LIGHTNING	7.50				

PLEASE INCLUDE P&P.  
MAKE CHEQUES PAYABLE TO IT'S  
SEND TO: SU/IT'S,  
33 FOSCOTE ROAD, LONDON NW4 3SE.  
Nearly 25% off retail price for all software.  
Almost everything advertised is in stock.

## AMERICAN & BRITISH COMPUTER BOOKS & MAGAZINES

We offer a World-Wide service for books from all publishers and more than 50 magazines. Please fill in the coupon and ask for monthly listing of NEW books and magazines. You may also subscribe to the following popular magazines starting from the current issues.

	Europe	Other
AMSTRAD CPC 464 USER	£19	£27
BYTE	£26	£32
COMMODORE USER	£18	£28
PERSONAL COMPUTER WORLD	£19	£28
QL USER	£18	£28
SINCLAIR PROGRAMS	£18	£28
SINCLAIR USER	£19	£29
YOUR COMPUTER	£21	£32

These are SPECIAL 6 months Trial Offer Prices.  
Please fill the coupon and send it with your cheque to:

**COMPUTER BOOKS AND  
MAGAZINES — HAULSTERM LTD**  
91 Exeter House, Putney Heath, London SW15  
Tel: 01-788 8746

Name ..... Tel: .....  
Address .....

I wish to subscribe for 6 months to the following magazines:

- ..... £ .....
- ..... £ .....
- ..... £ .....

Enclosed please find a cheque for Total £ .....

Please send me list of books and other magazines. ☐ SU7

# SLOMO

Full control of your micro with

World Patents Pending

## SLOMO SPEED CONTROLLER

Set the pace of games or programs to your own speed. Ideal programming tool for the enthusiast – aids debugging. Suitable for young children and older people to gain confidence in using the computer. Instant free facility user port connector and extender.



£14.95  
incl. VAT



£4.95  
incl. VAT

## RESET BUTTON & EXTENDER

A neatly designed add-on for the Spectrum and Spectrum +. Resets the system gently without loss of power.

Safe recovery from microdrive crashes. Extender bar for secure fitting of other peripherals.

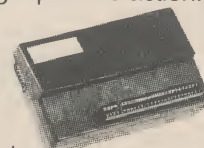


£9.95  
incl. VAT

## JOYSTICK

A high quality microswitched joystick of durable design. Very light positive action.

## SPECTRUM PROGRAMMABLE INTERFACE



Easy to program. Allows ALL games to be played with joystick by placing control keys into interface memory.

Compatible with microdrive and all popular joysticks including Quickshot II. Keeps a record of your games so you only need to program once for each game. Supplied complete with tape & instructions.

£19.95  
incl. VAT

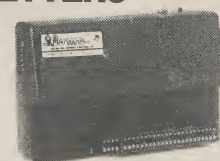
NEW

FROM THE INVENTORS  
OF MICRO SLOW MOTION

NEW

## SLOMO PACESETTERS

THE TWO NEW JOYSTICK INTERFACES INCORPORATING THE NIDD VALLEY SLOW MOTION/FREEZE FACILITY. (Patents Pending). Both with on/off button for slow motion, and with LED indicator to safeguard programs from corruption whilst loading or saving. Full control to the user at the turn of a knob from normal speed down to freeze.



COMPATIBLE WITH ALL POPULAR JOYSTICKS INCLUDING QUICKSHOT II.

## PROGRAMMABLE PACESETTER

To the same high specification as our programmable interface shown above but now ALL games with slow motion.

## SPECTRUM PACESETTER

Non-programmable – responds to Kempston Software using IN (31) – Integral slow motion.

£14.95  
incl. VAT

## RELIABILITY AND SUPPLY GUARANTEED ON ALL NIDD VALLEY PRODUCTS

Prices include VAT and postage. To order please send cheque or postal order payable to Nidd Valley Micro Products Ltd. Allow 14 days for delivery. We do not bank your cheque until day of despatch. FULL MONEY BACK GUARANTEE IF NOT COMPLETELY SATISFIED. Please send order (no stamp needed) To:

**NIDD VALLEY MICRO PRODUCTS LTD**  
Dept. SU785, FREEPOST, KNARESBOROUGH,  
NORTH YORKSHIRE HG5 8YZ.  
Telephone: Harrogate 0423-864488



## 4 Games for the ZX Spectrum

# FREE

Order this new BASIC programming course for an introductory price of just £9.95 and you will receive these 4 great games absolutely FREE.

This new concept in computer education will take you beyond simple BASIC instructions, into the world of the professionals where you will learn their secret techniques. It comes on cassette, so you simply relax in front of your television and watch and listen as we show you how to get the most from your micro.

For 16K or 48K RAM



**ATTRIBUTES**  
PEEK & POKE  
PLOT & DRAW  
ANIMATED GRAPHICS  
PROGRAM STRUCTURE  
HIGH RES. GRAPHICS  
FULL COLOUR & SOUND

SPECTRUM HOLDINGS LTD., P.O. BOX 104, CRAWLEY, RH10 4FU

Make Cheque or Postal Order for £9.95 payable to: SPECTRUM HOLDINGS LTD.  
and send to: P.O. BOX 104, CRAWLEY, RH10 4FU

Name \_\_\_\_\_

Address \_\_\_\_\_

Postcode \_\_\_\_\_ Tel: \_\_\_\_\_

Orders despatched within 7 days.

**PROFESSIONAL SOFTWARE**

SU7

## UNBELIEVABLE!

### MAKE THE MOST OF YOUR MICRODRIVE WITH INTERFACE III THE IMPOSSIBLE HAS BEEN DONE

Yes it's true this **fantastic** new peripheral will transfer **every program available** on to microdrive. **Yes every one.** Yet, believe it or not it is so **easy to use** that we are training our pet cat (Clive) to use it. **Anyone** capable of loading and saving a BASIC program **can** transfer **really awkward** programs to microdrive.

Just look at these features . . .

- Consists of hardware and software (software on microdrive cartridge).
- Transfers all programs available on to microdrive.
- Very, very, easy to use. (If Clive can do it we're sure you can.)
- All programs reLOAD and RUN once transferred.
- Makes a 'snapshot' of any stage of a program. (Saved as a screen.)
- Transfer can be actuated at any stage allowing 'customised' versions.
- Will also save to tape. (Normal speed load once saved.)
- Programs will reLOAD independently of the 'interface'.

**IF YOU HAVE A MICRODRIVE  
YOU MUST HAVE INTERFACE III**

**ONLY £39.95 inc. P&P**

Trade and distributor  
enquiries invited.  
UK and overseas.

The Software can be  
supplied on cassette  
for tape users.

This product is in a class  
of its own.  
Designed by DRAYSOFT.

All prices include P&P and VAT. Send cheque  
Postal Order or Credit Card No. Credit Card orders  
accepted by phone. Callers welcome. Wide range  
of goods stocked. Trade enquiries welcome. Euro  
pean orders, send price as advertised. Outside  
Europe £2.00 for airmail. Mail order to Evesham  
Shop please.



**MICRO CENTRE**  
BRIDGE STREET, EVESHAM,  
WORCESTERSHIRE  
Tel: 0386 49641

**MICRO CENTRE**  
1756 PERSHORE ROAD,  
COTTLEDGE, BIRMINGHAM.  
Tel: 021 458 4564



- Holds 16 Microdrive Cartridges
- Interlocking design feature allows Horizontal and Vertical Stacking - Space Saver

## NOW, buy a CARTRIDGE TIDY and you're a free! member of

## CARTRIDGE CADDY SYSTEM

What Cartridge Caddy  
membership offers you

**Microdrive cartridges  
at £1.50 delivered to your door  
within 24 hrs!**

Ministry of Defence Suppliers

Please send me . . . . . (Qty) Cartridge Tidy's, ☐ ZX ☐ QL,  
at £6.99 each, inclusive, and . . . . . blank microdrive cartridges  
at £1.50 each I enclose a cheque for £ . . . . .

Make cheques payable to:

4 Systems, 4QL House, 68 Foxwood Close, Feltham, Middlesex  
TW13 7DL Telephone 01-844 1399

Mr/Mrs/Miss \_\_\_\_\_

Address \_\_\_\_\_

# 4



68 FOXWOOD CLOSE, FELTHAM, MIDDLESEX TW13 7DL TEL: 01-844 1399



# Software Publishers

- A & F Software**, Unit 8, Canalside Industrial Estate, Woodbine Street East, Rochdale, Lancashire OL16 5LB
- Abacus Software**, 21 Union Street, Ramsbottom, Nr Bury, Lancashire
- Abex**, 20 Ashley Close, Manor Hall Drive, London NW4
- Abersoft**, 7 Maesfallen, Bow Street, Aberystwyth, Wales
- Activision**, 15 Harley House, Marylebone Road, London NW1
- Adder Publishing Ltd**, PO Box 148, Cambridge CB1 2EQ
- Add-on Electronics**, Units 2,3 & 4, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ
- Addictive Games**, 7a Richmond Hill, Bournemouth BH2 6HE
- ADS**, 8 Bronchurch Street, Portsmouth, Hampshire PO4 8RY
- Alan Firminger**, 171 Herne Hill, London SE24 9LR
- Allanson Computing**, 77 Chorley Road, Adlington, Chorley, Lancashire PR6 9LH
- Alligata Software**, 1 Orange Street, Sheffield S1 4DW
- Argus Press Software**, Liberty House, 222 Regent Street, London W1
- Arcade Software**, Technology House, 32 Chislehurst Road, Orpington, Kent BR6 0DG
- Ariolasoft**, Asphalt House, Suite 105-106, Palace Street, London SW1E 5HS
- Arnold Wheaton**, Parkside Lane, Dewsbury Road, Leeds LS11 5TD
- Artic Computing**, Main Street, Brandesburton, Drifffield YO25 8RG
- Astrocalc**, 67 Peascroft Road, Hemel Hempstead, Herts HP3 8ER
- Atlantis Software**, 19 Prebend Street, London N1
- Automata UK**, PO Box 78, Southsea, Hampshire
- Axis**, 71 Brookfield Avenue, Loughborough, Leicestershire LE11 3LN
- Beau-Jolly**, 19A New Broadway, Ealing, London W5
- Bellflower Software**, 6 Rosewood Avenue, Greenford, Middlesex UB6 7QP
- Betasoft**, 92 Oxford Road, Moseley, Birmingham B13 9SQ
- Beyond Software**, Lector Court, 151 Farringdon Road, London EC1
- Bridge Software**, 36 Fernwood, Marple Bridge, Stockport, Cheshire
- Bridgemaster**, Sandymouth, Beeches Road, Farnham Common, Buckinghamshire SL2 3PS
- Bubble Bus Software**, 87 High Street, Tonbridge, Kent TN9 1RX
- Calpac Computer Software**, 108 Hermitage Woods Crescent, St Johns, Woking, Surrey
- Campbell Systems**, 57 Trap's Hill, Loughton, Essex IG10 1TD
- CCS**, 14 Langton Way, Blackheath, London SE3 7TL
- CDS Micro Systems**, Silver House, Silver Street, Doncaster, South Yorkshire DN1 1HL
- Century Communications**, Portland House, 12-13 Greek Street, London W1V 5LE
- Chalksoft**, 17 Willowslea Road, Northwick, Worcester
- Cheetahsoft**, 24 Ray Street, London EC1R 3DJ
- Clever Clogs**, Liberty House, 222 Regent Street, London W1
- Collins**, 18/20 Stephenson Way, North Gower Street, London NW1 2DX
- Collins Soft**, 8 Grafton Street, London W1
- Compusound**, 32/33 Langley Close, Redditch, Worcester B98 0ET
- Computatutor**, 3 Thalia Close, Greenwich, London SE10 9NA
- Computer One**, 32 Science Park, Milton Road, Cambridge CB4 4DH
- Contrast Software**, Warren Road, Liss, Hampshire GU33 7DD
- Cornhill Software**, 2 Penrith Way, Aylesbury, Buckinghamshire HP21 7JZ
- CP Software**, 1 Glebe Road, Uxbridge, Middlesex UB8 2RD
- Craig Communications**, PO Box 46, Basingstoke, Hampshire
- Creative Sparks**, Thomson House, 296 Farnborough Road, Farnborough, Hampshire
- CRL**, 9 King's Yard, Carpenters Road, London E15 2HD
- Cross Software**, 72 Swanshope, Burney Drive, Loughton, Essex
- CSP Systems**, 213 Stainbeck Road, Leeds
- DACC Ltd**, 23 Waverley Road, Hindley, Wigan, Lancashire WN2 3BN
- Database Publications**, Europa House, 68 Chester Road, Hazel Grove, Stockport, SK7 5NY
- Delta 4**, The Shielding, New Road, Swanmore, Hampshire SO3 9PE
- Design Design**, 2 Ashton Way, East Herrington, Sunderland SR3 3RS
- Digital Integration**, Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3AJ
- Digital Precision**, 91 Manor Road, Higham Hill, London E17
- DK'tronics**, Unit 6, Shire Hill Ind Est, Saffron Walden, Essex CB11 3AQ
- Domark**, 204 Worple Road, London SW20
- Dorcas Software**, 3 The Oasis, Glenfield, Leicester
- Dunitz**, 154 Camden High Street, London NW1 0NE
- Durrell Software**, Castle Lodge, Castle Green, Taunton TA1 4AB
- Dymond Software**, 22 Hospital Road, Annan, Dumfriesshire DG12 5HP
- Dynavision Production Studio**, PO Box 96, Luton LU3 2JP
- East London Robotics**, St Nicholas House, The Mount, Guildford, Surrey GU2 5HN
- Eastmead**, Eastmead House, Lion Way, Camberley, Surrey GU16 5EZ
- 8th Day**, 18 Flaxhill, Moreton, Wirral, Merseyside LU6 7UH
- Electric Abacus**, Oaklands House, Solartron Road, Farnborough, Hants
- Elite Systems**, Anchor House, Anchor Road, Aldridge, Walsall, West Midlands WS9 8PW
- Elm Computers**, 59 Bateman Road, East Leake, Loughborough, Leicestershire LE12 6NN
- Englefield Software**, High House, Mill Street, Buxton, Norfolk NR10 5JE
- Fantasy Software**, Fauconberg Lodge, 27a St Georges Road, Cheltenham, Gloucestershire
- Fawkes Computing**, 41 Wolfridge Ride, Alveston, Bristol BS12 2RA
- Felix Software**, 19 Leighton Avenue, Pinner HA5 3BW
- Firebird Software**, Wellington House, St Martins Lane, London WC2
- Fisher Software**, 47 London Road, Buxton, Derbyshire
- Fulwood**, 20 Templestowe Hill, Whitkirk, Leeds LS15 7EJ
- Games Machine**, 40 Fretherne Road, Welwyn Garden City, Hertfordshire AL8 6NU
- Gamma Software**, 12 Milverton Road, London NW6 7AS
- Gargoyle Games**, 74 King Street, Dudley, West Midlands
- Gavin Barker**, 12 Fleming Field, Shotton Colliery, County Durham DH6 2JF
- Gemini Marketing**, Unit 21, Dinan Way Trading Estate, Exmouth, Devon EX8 4RS
- Gemtime Software**, 16 Ben Ledi Road, Kirkcaldy, Fife KY2 5RP
- Genesis Productions**, 30 Great Portland Street, London W1N 5AD
- Gilsoft**, 30 Hawthorn Road, Barry, South Glamorgan, South Wales
- Gouldstone**, 45 Burleigh Avenue, Wallington, Surrey SM6 7UG
- Granada Publishing**, 8 Grafton Street, London W1X 3LA
- Gremlin Graphics**, Alpha House, 10 Carver Street, Sheffield S1 4FS
- Griffin & George**, Frederick Street, Birmingham B1 3HT
- Haresoft**, PO Box 365, London NW1
- Harlequin Software**, 43 Osprey Park, Thornbury, Bristol BS12 1LY
- Hardland Software**, 32 Ivor Place, London NW1 6DA
- Heinemann Computer Education**, 22 Bedford Square, London WC1B
- Hessel**, 15 Lythan Court, Cadwell Crescent, Sunningdale, Berkshire
- Hestacrest**, PO Box 19, Leighton Buzzard, Bedfordshire LU7 0DG
- Hewson Consultants**, 56B Milton Trading Estate, Milton, Abingdon
- Hilderbay**, 8/10 Parkway, Regents Park, London NW1 7AA
- Hilton Computer Services**, 14 Avalon Road, Orpington, Kent
- Hisoft**, 180 High Street, Dunstable, Bedfordshire LU6 1AT
- Hodder & Stoughton**, PO Box 6, Dunton Green, Sevenoaks, Kent TN13 2XX
- Homestudy Ltd**, Treleigh Woods Farm, Treleigh, Redruth, Cornwall TR16 4AW
- Hornby Software**, 21 Penfold Hill, Leeds LS15 0PW
- IMS Software**, 143/145 Uxbridge Road, Ealing, London W13 9AV
- Image Systems**, 34 Lynwood Drive, Worcester Park, Surrey KT4 7AB
- Imagine (84)**, 6 Central Street, Manchester M2 5NS
- Impact Software**, 2 New Street, Cullumpton, Devon EX15 1HA
- Imperial Software**, Imperial House, 153 Churchill Road, Poole, Dorset
- Incentive**, 54 London Street, Reading, Berkshire RG1 4SQ
- Inform Software**, 3 Treesdale Close, Birkdale, Southport PR8 2EL
- Interceptor Micros**, Lindon House, The Green, Tadley, Hampshire
- Interstella Software**, 82 New Forest Drive, Brockenhurst, Kent
- ITS Software**, 33 Foscoate Road, London NW4 3SE
- JK Greye Software**, 16 Park Street, Bath, Avon BA1 2TE
- JRS Software**, 19 Wayside Avenue, Worthing, Sussex BN13 3JH
- Kemp**, 43 Muswell Hill, London N10 3PN
- Keysoft**, 6 Bruce Grove, Tottenham, London N17
- Kosmos Software**, 1 Pilgrims Close, Harlington, Dunstable, Bedfordshire LU5 6LX
- Kuma Computers**, 12 Horseshoe Park, Pangbourne, Berkshire RG8 7JW
- Learning Systems**, 11 Warwick Court, Princes Drive, Harrow, Middx HA1 4UB
- Legend**, PO Box 435, London E4 7LX
- Lerm**, 10 Brunswick Gardens, Corby, Northamptonshire
- Level Nine**, 229 Hugenden Road, High Wycombe, Buckinghamshire HP13 5PG
- Llainlan Software**, Pontyberem, Llanelli, Dyfed, Wales
- Longman**, Longman Group, Longman House, Harlow, Essex CM20
- Lothlorien**, 56a Park Lane, Poynton, Stockport, Cheshire SK12 1RE
- Macmillan Software**, 4 Little Essex Street, London WC2R 3LF
- Manor Software**, 24 Manor Gardens, London SW20
- Martech Games**, 9 Billingham Road, Eastbourne, East Sussex BN20 8LY

continued on page 110



# Software Publishers

continued from page 109

**Mastertronic**, (as for Mastervision)  
**Mastervision**, Park Lorne, 111 Park Road, London NW8 7JL  
**McGraw Hill**, Shoppen Hangers Road, Maidenhead, Berkshire  
**Medidata**, PO Box 26, London NW9 9BW  
**Melbourne House**, Castle Yard House, Castle Yard, Richmond TW10  
**Metacomco**, 26 Portland Square, Bristol BS2 8RZ  
**Michael Slatford**, 3 Campden Road, South Croydon, Surrey CR2 7EQ  
**Micro Dealer UK**, Unit 6 Marlborough Road Trading Estate, Lattimore Road, St Albans, Hertfordshire  
**Micro Wish**, PO Box 15, Colne, Lancashire BB8 9DB  
**Microbyte**, 19 Worcester Close, Lichfield, Staffordshire  
**Microcosm**, 68 The Glade, Clayhall, Ilford  
**Micromania**, 14 Lower Hill Road, Epsom, Surrey KT19 8LT  
**Micromega**, 230/236 Lavender Hill, London SW11  
**Mikrosphere**, 72 Rosebery Road, London N10 2LA  
**Mikro-Gen**, 44 The Broadway, Bracknell, Berkshire RG12 1AG  
**Minatron Computing**, 34 Pinewood Close, Westbury-on-Trym, Bristol BS9 4AJ  
**Mind Games**, Liberty House, 222 Regent Street, London W1  
**Mirrorsoft**, PO Box 50, Bromley, Kent BR2 9TT  
**Monitor Software**, Suite 11, 526-8 Watford Way, London NW7  
**Mosaic**, 187 Upper Street, London N1 1RQ  
**MW Gamesworld**, 12 Lawnswood Avenue, Chasetown, Walsall WS7 8YD  
**Myrmidon Software**, PO Box 2, Tadworth, Surrey, KT20 7LU  
**Naigram Software**, c/o Soho Synth House, 18A Soho Square, London  
**Nectarine**, 837 Yeovil Road, Slough SL1 4JH  
**New Generation Software**, FREEPOST, Bath BA2 4TD  
**Newssoft**, 12 White Broom Road, Hemel Hempstead, Hertfordshire  
**Oasis Software**, 12 Walliscote Road, Weston-Super-Mare, Avon  
**Ocean Software**, 6 Central Street, Manchester M2 5NS  
**OCP**, 4A High Street, Chalfont St Peter, Buckinghamshire SL9 9QB  
**Orpheus Ltd**, Unit 1, Church Farm, Hatley St George, Near Sandy, Bedfordshire SG19 3HP  
**Orwin Software**, 26 Brownlow Road, Willesden, London NW10 9QL  
**Palace Software**, The Scala, 2nd Floor, 275 Pentonville Road, London  
**PD Visual Marketing**, Thanet House, Craven Road, London W2  
**Penguin**, 536 King's Road, London SW10  
**Phipps Associates**, 172 Kingston Road, Ewell, Surrey  
**Phoenix Publishing**, 14 Vernon Road, Bushey, Hertfordshire WD2 2JL  
**Picturesque**, 6 Corkscrew Hill, West Wickham, Kent BR4 9BB  
**Pitch Associates**, 39 Rockleigh Avenue, Leigh-on-Sea, Essex  
**Pooter Games**, 24 Parsloes Avenue, Dagenham RM9 5NX  
**Poppysoft**, The Close, Common Road, Headley, Newbury, Berkshire  
**Positive Image Software**, 129 Dumbarton Road, Glasgow  
**Print 'n' Plotter Products**, 19 Borough High Street, London SE1 9SE  
**Protek Computing**, 1a Young Square, Brucefield Ind Park, Livingston, West Lothian  
**Psion**, 2 Huntsworth Mews, Gloucester Place, London NW1  
**PSS**, 452 Stoney Stanton Road, Coventry CV6 1JG  
**Pulsonic**, Warwick Distribution Ltd, 3 Standard Road, Park Royal, London NW10 6EX  
**Q-Soft**, PO Box 90, Barnet, Hertfordshire EN5 5RN  
**Quest International Computer Systems**, Gillingham House, 38-44 Gillingham Street, London SW1  
**Quicksilver**, Liberty House, 222 Regent Street, London W1  
**Radar Games**, 53 Flavel Street, Woodsetton, Dudley DY1 4NU  
**RAM Writer**, 3 Vumba House, 2 Cedar Gardens, Sutton, Surrey  
**Ramtop Services**, 5 Rue D'Artois, 75008, Paris, France  
**Realtime Software**, Prospect House, 32 Sovereign Street, Leeds LS1 4BJ  
**Red Shift**, 12c Manor Road, Stoke Newington, London N16 5SA  
**Richardson Institute for Conflict and Peace Research**, Dept of Politics, University of Lancaster LA1 4YF  
**Romantic Robot**, 77 Dyne Road, London NW6 7DS  
**Rose Software**, 148 Widney Lane, Solihull, West Midlands  
**Runesoft**, Charnwood House, Crossgate Drive, Nottingham NG2 1LW  
**Sentient Software**, Branch House, 18 Branch Road, Armley, Leeds LS12 3AQ  
**Scisoft**, 5 Minister Gardens, Newthorpe, Eastwood, Nottingham NG16 2AT  
**SCR Adventures**, 190 Shelbourne Road, Tottenham, London  
**SD Microsystems**, PO Box 24, Hitchin, Hertfordshire SG4 0AE  
**Selec Software**, 37 Councillor Lane, Cheddle, Cheshire  
**Serim Software**, Freepost, Dept SU7, PO Box 163, Slough, Berkshire SL2 3YY  
**Shadowsoft**, 70 Gooseacre, Cheddington, Bedfordshire  
**Shards**, Suite G, Roycraft House, 15 Linton Road, Barking, Essex

**Shepherd Software**, Elm House, 23-25 Elmshott Lane, Chippenham, Slough, Berkshire  
**Silversoft**, London House, 271/273 King Street, London W6 9LZ  
**Sinclair Research**, 25 Willis Road, Cambridge CB1 2AQ  
**Slogger Software**, 215 Beacon Road, Chatham, Kent  
**Soft Tech**, 31 Lampits, Hoddesdon, Hertfordshire  
**Softel**, 5 Durward Drive, Glenrothes, Fife KY6 2LB  
**Software Cottage**, 19 Westfield Drive, Loughborough, Leicestershire LE11 3QJ  
**Software Farm**, 3rd Floor, 16 Charlotte Street, London W1  
**Software Projects**, Bear Brand Complex, Allerton Road, Woolton, Liverpool, Merseyside L25 7SE  
**Spartan CC**, 29 Feltham Avenue, East Moseley, Surrey KT8 9BJ  
**Spectadraw**, I Cowleaze, Chinnor, Oxfordshire OX9 4TD  
**Spectrasoft**, Capital House, Market Place, London W3 6AL  
**Spoof Software**, 58 Railway Road, Urmoston, Manchester M31 1XT  
**Star Dreams**, 17 Barn Close, Seaford, East Sussex, BN25 3EN  
**Startersoft**, 32 Parkfields, Chippenham, Wiltshire  
**Statesoft**, 29 Burrowfield, Welwyn Garden City, Hertfordshire  
**Stell Software**, 36 Limefield Avenue, Whalley, Lancashire BB6 9RJ  
**Sterling Software**, Garfield House, 86/88 Edgeware Road, London, W2  
**Stratagem Cybernetics**, 286 Corbin Place, 2E, Brooklyn, New York 11235  
**Sulis Software**, 4 Church Street, Abbey Green, Bath BA1 1FP  
**Sunshine Books**, 12/13 Newport Street, London WC2  
**Sussex Publication**, Townsend Poulshot, Devizes, Wiltshire SN10 1SD  
**System 3**, South Bank House, Black Prince Road, London SE11  
**Talent Computer Systems** Curran Building, 101 St James Road, Glasgow G4 0NS  
**Tasman Software**, 17 Hartley Crescent, Leeds LS6 2LL  
**Temptation Software**, 27 Cinque Ports Street, Rye, East Sussex  
**Terminal Software**, Derby House, Derby Street, Bury BL9 0NW  
**Texgate**, 14 Brook Lane, Corfe Mullen, Wimbourne, Dorset  
**The Edge**, 31 Maiden Lane, Covent Garden, London, WC2E 8LH  
**Think Tank**, 35 Wellington Road, Wembleton Park, London SW19  
**Thor Computer Software**, Erskine Industrial Estate, Liverpool L6 1AP  
**Timedata**, 16 Hemmells High Road, Laindon, Basildon, Essex SS15  
**Transform**, 41 Keats House, Porchester Mead, Beckenham, Kent  
**Tutorial Software**, 'Vilands', Glasllwch Lane, Newport, Gwent NP1  
**Ultimate Play the Game**, The Green, Ashby de la Zouch, Leicestershire LE6 5JU  
**Unicorn Micro Systems**, 312 Charminster Road, Bournemouth BH8 9RT  
**University Software**, 29 St Peters Street, London N1  
**US Gold**, Unit 10, The Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY  
**Vega Space Systems**, 28 Watford Road, St Albans AL1 2AJ  
**Virgin Games**, 2-4 Vernon Yard, London W11  
**V0<sup>2</sup>**, 9-10A The Bridge, Walsall, West Midlands  
**Vortex software**, Vortex House, 24 Kansas Avenue, off South Langworthy Road, Salford, M5 2GL  
**Widget Software**, 48 Durham Road, London N2 9DT  
**Winters**, 24 Swannington Close, Cantley, Doncaster, South Yorkshire  
**Woosoft**, 5 Andrews Close, Robertsbridge, Sussex TN32 5PB  
**Workforce**, 140 Wilsden Avenue, Luton, Bedfordshire  
**Wyvern Software**, 2 Princes Building, George Street, Bath BA1 2ED

## ZXWORD SOLUTION

### Across

5. Swap
7. Receiver
8. Dyslexia
9. After
11. Coda
12. Inverter
13. Entry
15. Trace
18. Binomial
19. Room
20. Filed
23. Valhalla
24. Relaunch
25. Surd

### Down

1. Mega
2. NEXT
3. Overwrite
4. Ordered
5. Silicon
6. Primary
10. Finger
13. End of file
14. Rotate
15. Threads
16. Command
17. Library
21. Loud
22. Dice



**TO ADVERTISE IN THE SUPERMART CALL SINCLAIR USER ON 01-251 6222**

## 111



## When you need fast computer repairs

# Beware of the Cowboys

### VIDEO VAULT INTERNATIONAL 10 ★ Repair Service.

Don't be misled by an 'Average' price for Spectrum computer repairs, Video Vaults price is £19.95 inc. Parts, Ins. P & P. No hidden extras. Any other computer (Comm 64 - BBC - VIC 20 - Atari 2600), quoted for at most competitive rates.

★ WHILE YOU WAIT, OR REPAIRS BY RETURN BY PROFESSIONAL COMPUTER ENGINEERS.

★ 3 MONTHS WRITTEN GUARANTEE.

★ INTERNATIONAL REPAIR COMPANY.

★ GENUINE SINCLAIR PARTS USED.

★ DISCOUNTS FOR SCHOOL REPAIRS.

★ OVER 8 YEARS EXPERIENCE IN COMPUTERS.

★ FULL RETURN JOURNEY INSURANCE.

★ OPEN 7 DAYS A WEEK.

★ FREE SOFTWARE WORTH £5.95 WITH EACH SPECTRUM REPAIR.

★ SPECTRUM 16K UPGRADE TO 48K £30.00 + £1.50 P&P.

★ SPECTRUM UPGRADE KIT ONLY £25.00 + £1.00 P & P.

★ SPECTRUMS UPGRADED TO SPECTRUM 'PLUS' £30.00 + £1.50 P & P.

★ SPECTRUMS REPAIRED & UPGRADED TO SPECTRUM 'PLUS' £49.95.

★ OFTEN COPIED - NEVER BEATEN, REPAIRS BY RETURN.

Phone for free estimate or send computer (Not leads or Power supply) with £1.75 (U.K., EIRE, I.O.M., C.I.) or £6.50 (Europe, Scandinavia) we will contact you same day by phone or 1st class mail should you require quote first.

TRADE ENQUIRIES MOST WELCOME - ACCESS WELCOME.

**VideoVault Ltd.**  
ACCESS  
FREE GAME WORTH  
£5.95 WITH  
EACH SPECTRUM  
REPAIR.

Dept. 90, 140 High St., West, Glossop,  
Derbyshire, England. Tel: 04574 66555

**SPECTRUM SOFTWARE CLUB.** New titles at low prices. Only £5.00 life membership, with your first free, send now to D.Green PO Box 94, Radlett, Herts WD7 7LX or call Radlett 2673 for details.

**QL COMPUTER.** JM version, very little use, with eight Microdrive cartridges £240.00. Can deliver over reasonable distance from Nottingham. Tel: Ripley 810076.

**SAVE THE GOODFOLK** of Senavie, find the 'Crystall of Chantle'. A challenging text adventure for the 48K Spectrum. Send £2.25 payable to Pelagon Software, 6 Renoir Mews, Bognor Regis, W.Sussex PO22 9AU.

**HINTS AND POKES**, issue 5 available now. Approx 100 games covered per issue. Prizes for your most original tips. Send £1.00 (£1.25 Europe), to H&D Services (SU), 1338 Ashton Old Rd, Higher Openshaw, Manchester, M11 1JG.

**48K SPECTRUM** with Saga I keyboard. Sale includes 18" colour TV W.H.S. Data Recorder Interface, one ZX Microdrive and introductory cartridges, software and several instruction books £240.00. Tel: (0278) 785654.

**SPECTRUM PROGRAM AVAILABLE** for students of building and architecture at B/Tech II level. Produces printout of U Values to wall and roofs of composite construction. Explains thermal conductivity and resistances £4.95. Eden Software, 11 Maes-yr-Hafod, Menai Bridge. Tel: Bangor 351886.

**FOR ALPHACOM AND SPECTRUM PRINTERS.** Produce various large sized copies of screen display. Shading option, £3. T. Branch, 111 Yelland Road, Barnstaple, EX31 3EE. Also available 'Matrix Magic' at £3.

**RAM PACK CLEARANCE.** 16K Ram Pack for ZX-81 £4.95 inc P&P (UK). Greendale Electronics, Green Lane, Dronfield, Sheffield, S18 6LL. Trade enquiries welcome.

**QL INDEXER.** Stores index of all files in ordered format, search by any user defined string £5 or £3 if cartridge supplied. QL, 6 Broomfields Close, Solihull B91 2AP.

**SPECTRUM OWNERS (48K).** I would like to contact parents with young children (1-7 years). Please give child's name/age. All answered. 38 Homedale House, 3 Brunswick Road, Sutton, Surrey SM1 4DG.

**CHEAP GAMES.** Closure of software library means we're selling our stock of Spectrum games. £3.00 (cash only) for ten of the latest games. J.Bates, Airie, Church Road, Ballybrack, Dublin, Ireland.

**SPECTRUM 48K** in lo profile keyboard, plus tape recorder, plus joystick and interface, plus £450 worth of software. Worth £700, sell for £249 or swap for CBM64. Telephone Woking 25795.

**POKER, PONTOON AND HI-LO.** 3 card games on one tape for 48K spectrum. Cards fully graphically displayed with facilities for betting, etc. Full instructions included £4.95. J.Adams, 14 Laurel Banks, Heswell, Wirral, Merseyside.

**SPECTRUM 48K** in Saga Emperor 1 keyboard fitted with built in reset switch, games books etc. hardly used £120.00. Tel: 01-542 6788 and Kempston interface.

**PROGRAMMING HINTS.** Useful for writing your own programs. Software and hardware catalogue, dictionary of computer terms, plus free game(s)! Send £6 cash to R.Webley, 32 Monton Close, Trowbridge, Wilts.

**PRISM VTX 5000 MODEM** for Spectrum Micronet Prestel £28. Scott, 49 Hillary Rd, Maidstone. Tel: 61759.

**ALPHACOM 32 PRINTER**, never used, bought in error, packed as delivered £55. Will post well packed. Phone 0744 818761.

**FUTUBA FP-T7FG** and 48K Spectrum. Connect your Retransmitter to the computer to control your own programs (7 channels). Interface cable, software on cassette and instructions for only £18. Send Bank cheque or pay to Post giro 48522446-0. Aerodyn, Vettelslundsg-100, 72462 Västerås, Sweden. Tel: 021-125567.

**MAGICMUSIC.** Just select key and time signature and let your Spectrum compose and play original melodies for you to edit £6.95. From 11 Beaufort Close, Read, Burnley BB12 7QF.

**ZX81 16K** with printer and power pack, leads, manuals, game cartridge. All brand new £45. S.M.Smith, 2 Turpins Rise, Windlesham, Surrey GU20 6NG.

**HINTS AND POKES BROCHURE.** Join a rapidly growing list of satisfied game players. For latest edition send £1.00 (Europe) £1.25 to C.B.Dinneen, 13 Gordon St., Gorton, Manchester M18 8SL.

**CROSSWORD FANATICS**, Spectrum owners, design you own crosswords with the aid of 'Crossword Compiler' £5 from Byron Software, Dept SU, 57 Rangoon Road, Solihull, West Midlands B92 9DD.

**SINCLAIR SPECTRUM** specialist repairs £20, up-grading £30. Send computer with description of fault plus cheque to Redsil Electronics, 15 Quantock Close, Wigan WN36DX. Tel: 0942 216456. Quality repairs, speedy return.

**SPECTRUM 48K**, ZX Printer, Interface I, Microdrive, Green Monitor with sound, Dacardcard, ZX81, 9 rolls, 6 cartridges, 2 tapes, 6 books, manuals, boxed. Cost £500, yours for £300. Tel: 01-631 1131. Leave number for 'Apple Twenty'.

**MAGAZINE OF TIPS.** Tons of tips and pokes on many leading games like Alien 8, Everyone's a Winner, etc. Send stamp and 80p. J.Driscoll, 78 Headstone Lane, Harrow, Middlesex HA2 6HW.

**INDESCOMP KEYBOARD FOR SALE.** Strong black acrylic case, numeric pad, on/off switch. As new, only £15 (new £30). Ring daytime 01-409 2532 or eves 01-941 1929.

**48K SPECTRUM FOR SALE.** Under guarantee, includes £100 worth of top quality software + switchable joystick interface. Price negotiable. Please phone 01-674 8902 after 5pm.

## SINCLAIR SERVICE CENTRE

We have spares for all repairs to: Spectrum; ZX81; Interface 1; Micro drive and RAM pack. You pay £10.00 plus parts and return postage. All units repaired to original standard using genuine Sinclair spares by our HNC qualified staff. Also available Spectrum Memory Update 16K fitted by us for £28.50.

### QUANTUM

33 City Arcade, Coventry CV1 3HX  
(0203) 24632

## PREMIER LEAGUE

A SUPERB NEW FOOTBALL MANAGEMENT STRATEGY GAME FOR THE 48K SPECTRUM

AT LAST! A football game for the serious enthusiast — Using the FULL memory of your Spectrum. FEATURES INCLUDE: Training, Team Selection, Substitutes, Half-time scores, Full squad details, Named Goal scorers, Team styles, Save Game, Financial problems, PLUS MANY, MANY MORE!

STOP SPECTATING — START MANAGING

Mail Order only — UNBEATABLE VALUE at £4.75

Or send SAE for full details to:

**E & J SOFTWARE**

59 Stainton Road, Enfield, Middx EN3 5JP

## LIVE IN LAS VEGAS

A NEW FRUIT MACHINE GAME  
**FRUIT 2000**

This is the most addictive fruit machine game ever devised. It incorporates holds, roulette-style gambles, feature board, feature holds, super series, lines, multiple odds up to x12, and half gamble. Superb sound and brilliant graphics (729 pixels per fruit graphic!).

HOURS OF FUN FOR ONLY £3.99

— You'll be delighted —

Cheques or POs to:

**ROSSWARE, 646 London Road, Westcliff, Essex SS0 9HW**

## SPECTRUM REPAIRS

Spectrum repairs £18.50 including parts insurance and P/P.

Send your computer with cheque or PO for £18.50 and description of fault to:

### SUREDATA (SU)

45 Wychwood Avenue,  
Edgware, Middlesex.  
Tel: 01-951 0124

## SINCLAIR USER BINDER — NOW AVAILABLE

Each Binder holds 6 issues of 'Sinclair User' The price per Binder is £3.99 or 2 Binders for £7.00 (this price is inclusive of postage and packaging).

To order your Binder(s) just send your name and address with the number of Binders required and a cheque/postal order to:

B. J. Binders, 61 Gressel Lane, Tile Cross,  
Birmingham B33 9ST

(Please make cheques payable to B. J. Binders)  
Please allow 28 days for delivery

## SPECTROTEK

ZX SPECTRUM 16/48K.....£19.95

ZX INTERFACE 1.....£19.50

ZX MICRODRIVE.....£17.50

ZX PRINTER.....£14.95

32K UPGRADES Iss 2 & 3.....£28.50

All fully inclusive of VAT, p&p etc. Fast guaranteed repairs by qualified service engineers. Faulty Spectrums and printers, Microdrives etc, bought for cash. Send goods, fault note, cheque/PO to:

WHITTLE, THROPTON, MORPETH NE65 7JN

Tel: (0669) 20565

Overseas enquiries welcome

## FLAT RACING

QUICKRATER. An easy to use program which takes just a few minutes to rate a race. Inbuilt system produces recommended bets which so far this season has shown a good LEVEL STAKE PROFIT. By entering the daily newspaper you are using the program adapts to use the most important winner finding pointers from its racing pages.

Also THE CLASS PLAN. Bet the professional way using class as your guide. (Uses Sporting Life).

Both programs for the 48K Spectrum. Price £6 for either or £10 for both cheques or PO's to:

J Pooley, 68 Tilehurst Road, Reading, Berks.

## Advertisement Index

Betasoft .....	94	Micro X .....	68
Beyond .....	43,664	Mikro Gen .....	34,76
Cambridge Micro Electronics .....	98	Mirage .....	68
Campbell Systems .....	48	Modem House .....	33,92
Cheetah Marketing .....	16	Mr Software .....	91
CP Software .....	49	National Software Library .....	92
Cross Software .....	88	New Generation .....	65
Cumana .....	25	Nidd Valley .....	107
Database Software .....	74,75	Ocean .....	0BC
Datatar .....	98	Opus Supplies .....	40,51
Design Design .....	73	Oxford Computer Publishing .....	10,11
Digital Integration .....	27	Palace Software .....	21
Domark .....	42	Print & Plotter .....	68,69
East London Robotics .....	61	Quicksilver/Argus .....	14
Euro Electronics .....	94	Ram Electronics .....	57
Evesham Micro .....	108	Romantic Robots .....	64
Firebird .....	IBC	Rotronics .....	38
Frel .....	87	RSD Connections .....	88
4 Systems .....	108	Saga Systems .....	52
Gargoyle Games .....	44	Speedy Soft .....	56
GCE Tutoring .....	87	Simtron .....	92
Haulstern .....	107	Softly Softly .....	98
Hill MacGibbon .....	50	Spectrum Holdings .....	108
Imagine .....	IFC	Talent .....	36,88
It's .....	107	Tasman .....	30,31
Kempston .....	12	Thetford Micros .....	60
Lerm .....	94	Thoughts & Crosses .....	95
Metacomco .....	4	Transform .....	70,72
Micronet .....	100-102	Ultimate .....	35
Microsphere .....	104	US Gold .....	23
		Vortex .....	46



# STICKING THE BOOT IN

Next month we'll be sticking the boot in on the software industry. Showing how not to get ripped off if you've just written the next 'Jet Set Willy'.

And talking of our NCB Friend, we have a special review of the latest 'Jet Set Willy II'.

Plus an exclusive on 'Highway Encounter' by Vortex and the 'Hit Squad' with the authors of Gyron.

The August issue of Sinclair User, on sale July 18th.



**sinclair user**  
BRITAIN'S BEST SELLING SINCLAIR MAGAZINE

## 15% VAT SHOULD BE ADDED TO THE GROSS COST OF CLASSIFIED DISPLAY ADS

Reach an estimated readership of over 200,000 users per month for as little as **£3.53 (inc VAT)\***

Or if you are starting your own small business advertise in the supermart for only **£14.12 (inc VAT)**

Yes, all you have to do is fill in the coupon below including your name, address and telephone number and send to: Supermart, Sinclair User, EMAP, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU

Maximum 30 words.

Your advert will appear in the earliest possible edition.


Name .....

Address .....

Tel: .....

**Have you included the fee of £3.45 or £13.85**

Make cheques payable to EMAP PUBLICATIONS LTD

\*for second hand sales only

Conditions

The Advertisement Manager reserves the right to alter, reject or suspend an advertisement without assigning any reason. Advertisements are accepted subject to approval of copy and to the right of the Advertisement Manager to alter, reject or cancel any order without explanation. The Proprietors are not liable for any loss from any cause whatever, nor do they accept liability for printers' errors. The Advertisers shall indemnify the Publishers in respect of any claim, cost and expenses arising out of any libellous or malicious matter or untrue statement in any advertisement published for the advertisers, or any infringement of copyright, patent or design therein. The placing of any order will be deemed to be an acceptance of these conditions.



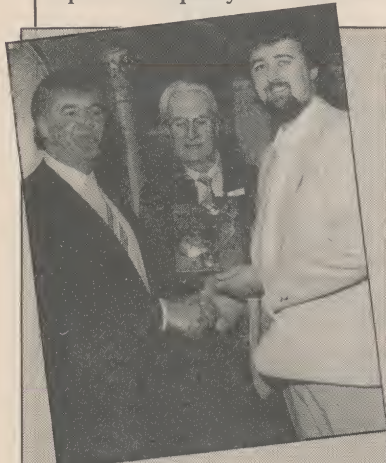
# Price of fish is going up. . .

SIR CLIVE is well-known as a patron of the arts. He was invited to the launch of *So Long and Thanks for All the Fish* by Douglas 'Hitchiker' Adams, and, so the story goes, he tried to buy a copy on the spot. Since the organisers were running short they suggested he bought one the next day. "I want it now" demanded **Sluggo**, and promptly wrote a cheque for £1000.

"It all sounds most unlikely," says a spokesman for Sinclair Research. "I hope the cheque didn't bounce." . . .

## Hi-tech raffles

The C5 is rapidly becoming a market leader – as a raffle prize. A party at the flash



Kevin Toms, who wrote Football Manager, and not much else, congratulates Laurie McMenemy on drinking 17 pints of Barbican without throwing up.

Hippodrome nightclub in London had a pink C5 as a prize, apparently because the do was a 'Pink Hippo' party. The mind boggles. But the peripatetic trike aspired to even greater fame as a star guest at the Woman's Conservative Conference at the Barbican.

There can be no greater accolade in the world of raffles than to have a horde of imposing Tory ladies jost-

ling for a ticket. The C5 has clearly made it at last . . .

## Hail and farewell

*Personal Computer News* is dead. The weekly paper was publisher VNU's last foothold on the home computer market, and it seems to have taken a while to make up its mind. "It's the fourth time we've folded, so we're getting pretty hardened to it," says features editor John Lettice. "You want me to say something really tacky but I won't. We're ★★@\$ed off." . . .

## Duffy breaks vow

Paul 'Trappist monk' Duffy – Gremlin, May – has resigned as general secretary of the **Guild of Software Houses**. "A purely amicable arrangement," says chairman Tim 'mega' Langdell.

Meanwhile, let's set the record straight on Duffy. The Silent One also says he didn't 'leave' Prism, he was sacked. And sued them. And got some dough.

Gremlin knew all that, but was too tactful to say so at the time. For the record, Paul resigned from GOSH. Until he tells us otherwise, of course . . .

## Full of beans

Khan of Khans **David Ward**, emperor of **Ocean** and all its islands, takes a break from one of his 73 day meetings to confirm another tale of his colourful past. This one concerns his great scheme to manufacture unusual coffee percolators in Poland at five pence a time and flog them on the streets of Liverpool.

"Cafatierès," says David, and changes the subject. It appears he's been skiing recently in exalted company. "My name has not

been linked with any of the crowned heads of Europe's daughters," he says, smugly. Does **Princess Stephanie** of Monaco know it hasn't been linked with hers, too . . .

## Stomach turning

**Mastertronic** writes to announce its discovery of the back of crisps packets, and thereby wins the month's **Brazen Backslappers Award**. So watch out for **KP Skips** and the fabulous **Clumsy Colin** Action Bike model you can get by sending off 342 empty packets.

Mastertronic is joining in with an ad for its game of the same name, appearing on 12 million packets of what a KP spokesperson described as "small round things."

The **Clumsy Colin** game and **KP Skips** will both be on sale at grocers," says Mastertronic, describing this as a happy coincidence.

Gremlin fully understands the wisdom of the deal. **KP Skips** is probably the only product which tastes worse than a Mastertronic budget special . . .

## Sinclair at war

Unlikely customers for the **QL** pop up everywhere. **Four Systems**, which offers cut-price microdrive cartridges to purchasers of its Cartridge Caddy storage box, proudly announces its status as a 'supplier to the Ministry of Defence'.

So what is **Heseltine** doing with all these **QLs**,



David Ward, Shogun of Ocean, takes on Kenji Hiroaka of arcade firm Konami at the ancient Japanese game of 'honourable bone-crushing'. David is the one on the right.

asks Gremlin. Is the machine an integral part of the cruise missile procedure – 'make sure formatted bomb is present in drive two'? Or does **Tarzan** simply hope all important data will become hopelessly and irrevocably corrupt long before any civil service moles can get their paws on it . . .

## Italian connection

Finally, thanks to K Ridick of Plymouth for his revelations concerning Genoa International Airport. It seems the arrival/departure screens have a flashing 'C' cursor in the lower left hand corner and a very familiar typeface. Gremlin has long suspected something fishy was going on at Italian airports, and the news that Genoa runs off a Spectrum explains a lot.

The question is, which Air Traffic Control simulation are they using in the control tower? Further tit-bits from holidaymakers will be gratefully digested . . .

Programmer Steve Turner gives a masonic handshake to Dragonlord ace Eamon McGing. He's hoping Eamon can help him out with the 16 grand Hewson Consultants lost on the Tiger fiasco.





# SILVER RANGE... Seeing is believing



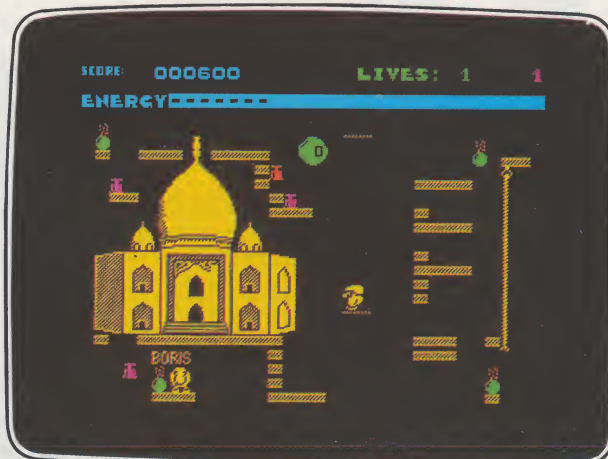
This is the **SICKBAY**. A spotless-ly clean compartment dazdly painted white. (N,E,W)  
I can also see:-  
MEDICINE CABINET

Give me your command.

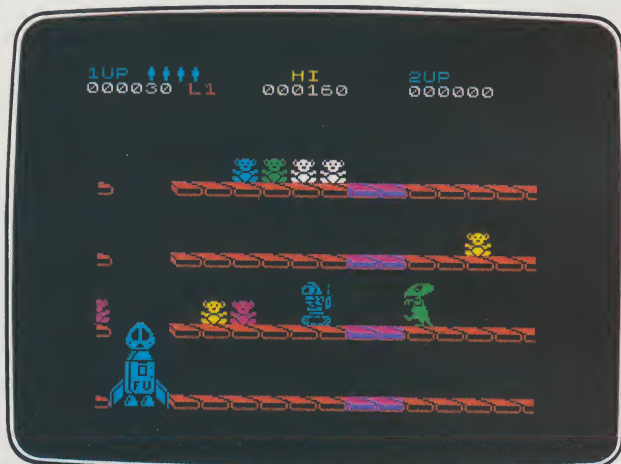
I have with me:-  
LARGE VEGETABLE STRAINER (worn)  
PORTABLE VACUUM CLEANER

I'm ready for your instructions.

**SUBSUNK** Adventure with Graphics  
Trapped on the sea bed in a scuppered submarine



**SHORT'S FUSE** Arcade/Strategy  
Sam Short secret agent versus Boris and his bombs



**DON'T PANIC** Arcade/Strategy  
Amusing and challenging, a game with a difference



**DON'T BUY THIS!** Compilation  
Five of the worst games you have ever seen

## FIREBIRD SILVER CATALOGUE

SPECTRUM 16K/48K

- 006 **RUN BABY RUN** Arcade  
Multi-car cop chase and shoot-out
- 035 **DON'T PANIC** Arcade/Strategy  
Amusing and challenging, a game with a difference

SPECTRUM 48K

- 008 **VIKING RAIDERS** War Game  
A test of strategy against the computer or friends
- 012 **THE WILD BUNCH** Strategy/Adventure  
Accused of murder, hunt the real killer
- 014 **MR FREEZE** Arcade/Strategy  
Six compartments, each tougher to de-ice

- 016 **BOOTY** Arcade/Adventure  
Twenty holds full of pirate loot
- 031 **SUBSUNK** Adventure with Graphics  
Trapped on the sea bed in a scuppered submarine
- 033 **THE HELM** Adventure  
An amusing, stylish text adventure
- 036 **SHORT'S FUSE** Arcade/Strategy  
Sam Short secret agent versus Boris and his bombs
- 037 **HELICHOOPER** Arcade  
Fast and smooth multi-screen action
- 040 **DON'T BUY THIS** Compilation  
Five of the worst but funniest games you have ever seen
- 043 **FAHRENHEIT 3000** Arcade/Strategy  
Sixty four screens to meltdown

**£2.50** each

## MAIL ORDER

Please state name of game (and machine) and numbers required. Enclose crossed cheque/PO made payable to FIREBIRD SOFTWARE. All offers are subject to availability. Orders are despatched promptly. All prices inclusive of VAT and postage.

**MAIL ORDER: \*FREEPOST FIREBIRD,  
WELLINGTON HOUSE,  
UPPER ST. MARTIN'S LANE,  
LONDON WC2H 9BR**

\*No stamps required

Firebird and the Firebird logo are trademarks of British Telecommunications plc.



FIREBIRD SOFTWARE, WELLINGTON HOUSE, UPPER ST. MARTIN'S LANE, LONDON WC2H 9DL. TEL: 01-379 6755/5626



SPECTRUM 48K · COMMODORE 64

# FRANKIE

GOES TO  
HOLLYWOOD



WAKELIN

ONLY  
**9.95**

Extraordinary Arcade Animation  
An amazing journey to the centre of the Pleasuredome  
Discover the secrets of the final screen!

**FREE! FREE! FREE!**

Unique LIVE recording of RELAX, never released in the U.K.  
Exclusively from **ocean** in **data-tune**® twin cassette pack.

Ocean Software Limited  
6 Central Street Manchester M2 5NS.  
Telephone: 061 832 6633

Ocean Software is available from selected branches of:  
**WOOLWORTH, WHSMITH, John Menzies, LASKYS,**  
**Rumbelows, COMET, Spectrum Shops** and all good software dealers.

**ocean**